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SOME HISTORICAL REFLECTIONS ON DENTAL RESEARCH. A COMPARISON OF THE SEPTIC AND PROTEOLYSIS-CHELATION THEORIES OF CARIES*

ALBERT SCHATZ, PH.D., M.R.S.H. and JOSEPH J. MARTIN, D.D.S., M.R.S.H.

PROLOGUE

"We should scarcely have ventured to address you without some apology or excuse; we have only one to offer, yet we think it is one you will all sympathize with and appreciate. It is a firm and rooted belief in the truth of our theory, and a hope, almost amounting to a conviction, that it will prove serviceable to humanity" (Underwood and Milles, 1881).[1]

INTRODUCTION

In 1958 Bibby, Gustafson, and Davies published a critique of the chemico-parasitic, proteolytic, and proteolysis-chelation theories of dental caries.[2] Unfortunately, however, they were somewhat unfamiliar[3, 4] with chelation as well as with the proteolysis-chelation concept which they endeavored to judge.[2] For this and other reasons their "Critique"[2] has been criticized[3, 4] and their conclusions have been questioned.[3, 4]

Among other things, Bibby *et al.* erroneously claimed: "The proteolytic-chelation theory . . . differs *only* (italics ours) from the suggestion of Milles and Underwood (1881) in that they named acid as the decalcifying agent instead of the chelating agents of the modern theorists."[2] This 79 year-old paper, which Bibby *et al.* cited,[2] is a publication by Underwood and Milles.[1] It is not, as they incorrectly stated, by Milles and Underwood. Furthermore, Bibby *et al.* might have dignified Underwood and Milles' contribution by referring to it not as a "suggestion" but as the "septic theory." For this is the term actually used by Underwood and Milles themselves. The reasons why Underwood and Milles selected this particular name and the important implications in their choice of the word "septic" will become apparent later on.

Stephan, by the way, also mistakenly referred to Milles and Underwood,[5] instead of Underwood and Milles.[1] Such inaccuracies call to mind Samuel Charles Miller's concern about "errors of many years past" being "carried along from one era to the next."[6] Cox, incidentally, did have the correct sequence of authorship, but misspelled Milles' name.[7]

Let us, however, return to Bibby *et al.* who claimed that the septic and proteolysis-chelation theories differ in "only" one respect.[2] Since scientific progress is impeded by confusion, it will be profitable to discuss and compare these concepts from an historical point of view. Such an approach will clearly reveal the important differences between the two theories.

RELEVANCE OF THE SEPTIC THEORY

Frankly, we do not understand why Bibby *et al.* even mentioned the work of Underwood and Milles in their "Critique."[2] For Bibby *et al.* "reminded" their readers "that because this paper" (i.e. their "Critique") "is concerned with the initiation of caries, attention will be centered on changes taking place in the *enamel* (italics ours) and little reference will be made to the later stages of the disease."[2] In contrast to this, Underwood and Milles devoted themselves to "the principal calcified dental tissue, *dentine* (italics ours), and its destruction by caries."[1] Their "considerations led" them "to seek for signs of the presence of organisms in carious *dentine*" (italics ours).[1] Thus Bibby *et al.* directed their attention toward *enamel*, whereas Underwood and Milles were concerned with *dentin*.

* Presented at the joint meeting of the New Jersey Section of the American Academy of Dental Medicine and the Essex County Dental Society on February 15, 1960.

SOME INTERESTING ASPECTS OF THE SEPTIC THEORY

Why Underwood and Milles restricted themselves to dentin is readily understood in terms of the scientific knowledge of their time. These investigators had conducted research for four years prior to presenting their paper in 1881 before the International Medical Congress in London. At that time, "the most commonly received views of the etiology of" caries were, according to them: (1) "the 'old vital theory' " which they felt had been "completely disproved," and (2) "the purely chemical theory."[1] The latter was in reality an early edition of the present-day acid theory.

Since Underwood and Milles believed that the primary attack by oral microorganisms was on the organic matter of teeth, they had no choice but to concentrate on dentin. This was, it must be remembered, some 25 years before Charles F. Bodecker conclusively demonstrated (1905-1906) that enamel did indeed have an organic matrix.[8, 9] At the time Underwood and Milles did their research, enamel, it was thought, consisted only of minerals. This must have been why they concerned themselves with dentin and cementum which were then known to contain organic matter.

Underwood and Milles could not "accept . . . the purely chemical theory . . . as wholly satisfactory."[1] In its place, they proposed their "septic theory."[1] Some of their statements about this hypothesis are particularly noteworthy. "Two factors," they wrote, "have always been in operation, (1) the action of acids, and (2) the action of germs" . . . "When caries occurs in the mouth, it is always under circumstances more favourable to the action of germs than to that of acids" . . . "We consider that caries is absolutely dependent upon the presence and proliferation of organisms" . . . "The successful exclusion of germs would prevent the disease."[1]

"The true caries," according to them, "first attacks the soft tissues—*i.e.* the fibrils—and encroaches from that *point d'appui* upon the surrounding calcified structures, thereby producing the characteristic enlargement of the channels, until two channels break into one, the intervening matrix being wholly destroyed. . . . Most probably the work of decalcification is entirely performed by the action of acids, *but these acids are, we think, secreted by the germs themselves* (italics ours), and the organic fibril upon which the organisms feed, and in which they multiply, is the scene of the manufacture of their characteristic acids which, in turn, decalcify the matrix, and discolour the whole mass . . . Those organisms attack first the organic material, and feeding upon it, create an acid which removes the lime salt, and . . . all the differences between caries and simple decalcification by acids is due to the presence and operation of germs. This view we propose to call the septic theory.' "

COMPARISON OF THE PROTEOLYSIS-CHELATION AND SEPTIC THEORIES

Now let us see whether proteolysis-chelation differs from the septic theory of Underwood and Milles[1] in *"only"* one respect, as claimed by Bibby *et al.*[2] First of all, it should be noted that Underwood and Milles considered their theory "rather an amplification of the chemical theory than a contradiction of it." By "the chemical theory" they clearly mean the classical acid theory, according to which *caries is caused by demineralization due to the hydrogen ions of fermentation acids, mostly lactic acid.* But according to proteolysis-chelation, which is quite different,[3,9-14] " 'there is the possibility that dental caries may result not because lactobacilli or other acidogens cause tooth decay, but because they fail to prevent it. Indeed, it may yet turn out that acid is one of nature's preventive factors militiating against tooth decay."[13] How then can Bibby *et al.* even attempt to equate the proteolysis-chelation and septic theories?[2] According to the former, acid may serve to prevent caries, whereas the latter designates acid *per se* as the cause of caries.

Secondly, the *only* decalcifying agents designated by the septic theory are "acids . . . secreted by the germs themselves."[1] In the case of proteolysis-chelation, the complexing sub-

stances responsible for demineralization[15-17] include:

1. metabolic products *excreted* by microflora, among which are fermentation acids;
2. degradation products arising from breakdown of organic components of the enamel and dentin (*Some* such complexing agents, e.g. peptides and mucopolysaccharide derivatives, may never have been *inside* the protistal cells. They could therefore not have been "secreted by the germs themselves," as the acids of the septic theory are.); and
3. other substances which originate in plaques and diffuse into the dental tissues.

Obviously, there are worlds of difference between the two theories as regards the origin, nature, and mode of action of the decalcifying agents.

Thirdly, the septic theory did not and could not, for reasons already mentioned, apply to enamel, but only to dentin and cementum. Proteolysis-chelation, on the other hand, is applicable to enamel as well as dentin, cementum, and bone.[3, 9-11] Finally, the views of Underwood and Milles on carries versus simple decalcification by acid differ considerably from the way proteolysis-chelation looks upon caries versus erosion.[12]

Contrary to what Bibby *et al.* assert,[2] the septic and proteolysis-chelation theories therefore do differ significantly. *This is to be expected since three-quarters of a century separated these concepts!* The septic theory originated at a time when enamel was looked upon as entirely inorganic. The proteolysis-chelation theory was evolved directly from considerations of the organic matrix which Charles F. Bodecker proved to be present in enamel.[8, 9] This contribution by Bodecker, 25 years after the septic theory was announced, ushered in the *modern* era of caries research.[9] *As conceptions of the chemical nature of enamel changed, theories of caries were bound to change.* Such philosophical aspects, characteristic of the historical development of every science, seem not to have been appreciated by Bibby *et al.* in their treatment of the two theories. It is impossible to equate the septic and proteolysis-chelation theories because the present always differs from the past. We have discussed elsewhere outlooks which fail to recognize not only change but the inevitability of change.[9-11, 18]

In genetics, the concept of the individuality of the gene, which originated with the work of the Austrian monk Gregor J. Mendel, has been a most basic tenet in genetic theory for almost a century. Now, however, it has been questioned.[19] From modern physics, we learn that some fundamental constants are *not* constants at all, but change as the universe ages.[20, 21] Theories are parts of knowledge. Since knowledge *inevitably* changes, theories *must* likewise change if we are to make progress. By their nature, theories are *dynamic,* just as science is dynamic. They are born, and pass through periods of adolescence, maturity, and senescence. They may then ultimately die (i.e. be discarded) or evolve into scientific laws whose validity has been established. At one stage or another, some theories become "reincarnated;" that is, they integrate with and become assimilated by, or themselves assimilate, other concepts. After this they may reappear in altered form.

The acid theory of dental caries, however, is truly unique for it has been an unchanged and unchanging concept for almost a century. During this time, the acid theory has completely failed to contribute *positive, practical* results. Moreover, this static situation in caries research, for which the persistence of the acid theory is directly responsible, has occurred when science generally has made notable advances in other fields. Even the germ-free rat work, interpreted with such bias in favor of acid,[11] actually proved *nothing* about acid.[11] J. B. MacDonald was forced to agree with us[11] that *"Orland's studies did not clarify the question as to whether decalcification or proteolysis or anything else was involved in the caries process."*[22]

Scientific developments alter the world in which we live and therefore affect the way we think. The new views and new thinking, which

result from changes in science, in turn influence the further progress of science. *Change is a most striking characteristic of all science, just as it is of all progress.* The inability to control and prevent dental caries does not seem to reflect any "inherent difficulty" (whatever that may be) of this problem.[10, 18] Instead the lack of progress seems to be associated with the lack of change in the way people have thought about tooth decay, and in the relatively limited way that most researchers have tried to do something about this problem. An impenetrable "acid wall," built up over a century, has restricted the area and extent of thinking about dental caries.[11, 18] There is no doubt that "orthodoxy must pay a penalty, like a parking ticket, for staying too long in the same place" (Alan Gregg).[23] Likewise, it is equally true that "he who is disposed to ignore history must be prepared to repeat it" (George Santayana).[23]

COMPARISON OF THE SEPTIC AND ACID THEORIES

Underwood and Milles unequivocally attributed caries initiation to *germs,* whose mode of action they explained in terms of the acids that the germs produced. To them, germs were "never secondary, but always primary."[1] On the other hand, Miller (according to Cox[7]) *never* committed himself on whether microorganisms actually *initiated* enamel caries. "He believed . . . acids were the immediate cause of decalcification *once initiation had been effected*"[7] (italics ours). Miller was therefore primarily concerned with acid and acid decalcification *after* the carious process began. To him, germs were of interest only because they produced the all-important acids.

Unfortunately, many dental investigators "who have followed Miller have freely gone beyond the established facts."[7] They have, in effect, "out-Millered Miller."[24] Allan, for example, in 1889 asked (according to Cox[7]) that *"initiation of caries by acids be acknowledged without proof."*[7] Even today, some authorities would have us still accept acid "on faith."[3,4,9,25]

Those who accepted, often uncritically,[9] the work of W. D. Miller as authoritative, have been responsible for the direction and scope of caries research over the past 80 years. What is not generally realized is that these same followers of Miller must bear responsibility for the failure of such dental research to have solved the caries problem. Miller's acid concept was an outstanding contribution in its time and opened up new areas for exploration. But to the extent that this same acid concept dominated thinking and research on tooth decay, it restricted further progress.

Now, we know, thanks to Bodecker, that enamel does contain an organic matrix, and that this organic matter is susceptible to direct microbial attack even in normally calcified enamel. We also know that degradation products derived from the enamel organic matter can demineralize via chelation and complexation reactions. For reasons such as these, the *acid* decalcification theory has been abandoned in favor of the proteolysis-*chelation* theory.

SPECULATIONS

It is intriguing to think of what might have been IF Underwood and Milles had not limited their thinking to "acids . . . secreted by the germs themselves."[1] By 1881, it was known that the organic matrix of dentin contained protein. John Hunter in 1778, Hatchett in 1799, Pepys in 1803, Berzelius in 1808, and others had shown this.[26] Moreover, putrefaction, proteolysis, and the liberation of ammonia during protein breakdown were also known when Underwood and Milles formulated their septic theory. Nencki, in 1874-1875, reported the first systematic study of chemical reactions associated with the bacterial breakdown of proteins, i.e. putrefaction. He found that glycine leucine, tyrosine, indol, and other products were formed when bacteria decomposed gelatin, albumin, and fibrin.[27] In 1877, Jeannert also studied the anaerobic breakdown of proteins and identified some of the products.[27] As early as 1847, 34 years before the septic theory of Underwood and Milles, Ficinus expressed the belief that caries began with a *putrefactive* attack by certain microorganisms on Nasmyth's membrane.[28]

Such was the relevant *biological* knowledge particularly with respect to *proteolysis,* that was available in 1881. From the point of view of *chemistry,* information concerning coordination compounds actually dates from Tassert's discovery in 1798 that ammonia combines with cobalt salts, and includes the work of Berzelius (1819), Graham (1837), Claus (1854), Blomstrand (1869), and Jörgensen (1878) on metal-ammonia complexes.[29]

The one piece of knowledge which did not exist in 1881, and which made it impossible for Underwood and Milles (or anyone else) to have formulated even a primitive proteolysis-chelation theory, was the fact that organic matter existed within the enamel itself. This "missing link" was ingeniously provided by Bodecker 25 years later.[8] Even so, IF Underwood and Milles had designated as decalcifying agents the degradation products of organic components in dentin instead of *secreted acids per se,* and IF they had consulted with contemporary chemists, they might have envisioned demineralization mediated via the formation of soluble calcium-ammonia complexes. (We now know that the solubility of calcium phosphates can be enhanced by ammonia.[30]) Such an idea might then have been evolved into some sort of a proteolysis-chelation theory concerned *not* with caries initiation (i.e. enamel caries) but with the way dentin could be destroyed.

However, Miller's numerous publications, the first of which appeared only one year after Underwood and Milles' report,[7] literally cast the die for acid. Paradoxically, Miller was himself originally a chemist who only afterward took up dentistry. Moreover, he *had* concerned himself with the putrefaction of dentin.[7] Nevertheless, he never appreciated the applicability to the caries problem of the by then well-known contributions of Hunter, Hatchett, Pepys, Nencki, Jeannert, Tassert, Berzelius, Graham, Claus, Blomstrand, Jörgensen, and others.

But here, once again, it must be realized that enamel was at that time thought to be wholly inorganic. So we cannot *now* expect Miller, any more than Underwood and Milles, to have extrapolated from proteolysis of dentin to proteolytic destruction of enamel. For enamel, as everyone then knew, contained no protein or any other organic matter. This erroneous idea was so firmly entrenched that Bodecker's admirable demonstration, in 1905-1906, of the enamel organic matrix[8] began to gain acceptance only around 1923.[9] His monumental work in this most important area encountered, according to Sognnaes, "half a century of stubborn opposition."[9]

So we see how nineteenth century science gave rise to what was then a logical acid theory. At the same time, by its very nature, nineteenth century science made a proteolysis-chelation concept of caries initiation impossible. In the twentieth century, advances in scientific knowledge as well as the failure of the acid theory to provide a solution to the caries problem *compelled* dental research to envision horizons[18] beyond the narrowly restricted area so rigidly defined by Miller's acid theory.[31] At the same time, in the twentieth century, formulation of the proteolysis-chelation mechanism and realization of its applicability to the caries process became both possible and inevitable.

We do not presume to sit in judgment of Underwood and Miles or Miller and point out that what they did half to three-quarters of a century ago is or is not in accord with present-day knowledge. All of us work within the framework of information available to us at the time. Contributions can therefore be best understood and appreciated only from an historical perspective. At the same time, however, one must bear in mind that: "The history of science is not simply the history of discoveries and new ideas that tend to approach closer to reality. It is also the history of the defense of these findings against errors due to propaganda, politics, and bureaucracy."[3]

OUR ATTITUDE TOWARD THE ACID DECALCIFICATION THEORY

In 1881, at the same Congress before which Underwood and Milles announced their septic theory, Kingsley reported: "The most important undetermined problem now confronting the dental profession is embodied in the inquiry

made daily by anxious parents in substantially the following form:—'Why do my teeth decay more rapidly than my father's or mother's did, and why are my children's teeth decaying at an earlier age than mine?' "[32]

According to Bibby *et al.*, caries can be controlled by various measures.[2] Yet Sognnaes, who recognizes the inadequacies of the acid theory,[3] has, by pointing out the magnitude of the caries problem,[33] in effect pointed out the failure of almost a century of acid research. So, despite claims to the contrary, are we not still at the same deplorable stage described by Kingsley in 1881?[32] How can one have much use for a theory into which so much time, money, and effort have been invested, but which has given so little in the way of positive, practical results?

OUR REPLY TO BIBBY, GUSTAFSON AND DAVIES' CRITICISM OF OUR PROTEOLYSIS-CHELATION THEORY

We choose to answer Bibby *et al.* in the words with which Underwood and Milles addressed those who criticized their septic theory in London 79 years ago. Bibby *et al.* "have misunderstood the drift and scope of" our theory. "If further researches disprove" our theory, "we shall be the first to say so." However, we "do not think" they "have heard the last . . . of our views, . . . and" we "confess to a suspicion that our endeavors to convince our . . . critic(s) . . . will be crowned with success."[1]

As to the fruits of the proteolysis-chelation theory: "Do not expect too much all at once; we had an embryonic theory, and as you had a Congress we determined to broach it to you; of course, time alone can establish it, but *we cannot give you a new theory, and at the same moment, one sanctioned by time* (italics ours). Our bantling is in his cradle: we must wait to see what he will grow up to be."[1]

Finally, "One thing I think you will all agree upon, that, whatever the merits of the paper, it has produced a very animated discussion, for which, in the name of my colleague . . . and myself, I heartily thank you."[1]

EPILOGUE

"This is yet the childhood of the world, and a supine credulity is still the most charming characteristic of man" (Sir William Osler).[23] "There are more things in heaven and earth, Horatio, than are dreamt of in your philosophy" (Shakespeare, *Hamlet*).

"Dich im Unendlichen zu finden, muss trennen erst und dann verbinden." ("In order to attain infinity, one must separate first and unify afterwards" (Goethe).

"The hottest places in Hell are reserved for those who, in a period of . . . crisis, maintain their neutrality" (Dante).

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REFLEXIONES HISTORIC SUPER LE RECERCA DENTAL: UN COMPARATION INTER LE THEORIA SEPTIC DE CARIE E LE THEORIA DE PROTEOLYSE E CHELATION

per Dr. phil. Albert Schatz (M.R.S.H.) e Dr. chir. dent. Joseph J. Martin (M.R.S.H.)

SUMMARIO IN INTERLINGUA

In 1958 Bibby, Gustafson, e Davies publicava un critica del theorias chimico-parasitic, proteolytic, e proteolytico-chelational de carie dental. Infortunatemente lor familitaritate con le chelation non esseva perfecte, como lor familiaritate con le concepto de proteolyse e chelation que illes essayava criticar. Pro iste e altere rationes lor "critica" es criticate e lor conclusiones es questionate.

Es il ver que le theoria proteolytico-chelational differe ab le theoria septic de Underwood e Milles in un "sol" respecto, como Bibby *et al.* se exprime? Nos debe notar que Underwood e Milles considerava lor theoria como "plus tosto un amplification del theoria chimic que un contradiction de illo." Per "le theoria chimic" illes clarmente voleva significar le classic theoria acidic, secundo le qual carie resulta del dismineralisation causate per iones de hydrogeno ab acidos de fermentation, principalmente acido lactic. Sed secundo le tehoria de proteolyse e chelation, il es possibile que carie dental pote resultar non del action de lactobacillos e altere acidogenos attaccante le dentes, sed de lor non-action que non preveni le carie. Vero, il es possibile que le acido va esser recognoscite como un del factores natural que preveni le carie. Como, alora, poet Bibby *et al.* proponer un equation inter le theoria septic e le theoria de proteolyse e chelation? Secundo le theoria de proteolyse e chelation, le acido pote servir pro le prevention de carie, durante que le theoria septic designa le acido per se como le causa de carie.

In plus, le sol agentes discalcificante designate per le theoria septic es "acidos . . . secretate per le germines mesme."

Finalmente, le theoria septic non esseva applicabile, e non poteva esser applicabile—a causa de rationes jam mentionate—al email sed solmente al dentina e al cemento. Le theoria de proteolyse e chelation, del altere latere, es applicabile al email como etiam al dentina, al cemento, e al osso. In summa, le opiniones de Underwood e Milles super le relation inter carie e simple discalcification per medio de acido differe considerabilemente del relation inter carie e erosion secundo le theoria de proteolyse e chelation.

ALBINISMUS: ITS ORAL MANIFESTATIONS

CLIFTON O. DUMMETT, D.D.S.*

INTRODUCTION

Albinismus has been defined as a congenital and inheritable symptom complex, characterized in its complete form by a total and universal lack of melanin in the epidermis, the hair, the iris and choroid. As a result, the skin assumes an abnormally pale pink appearance, the iris may be pink or blue, and the hair platinum blond in color. Frequently, there are concomitant affections, and these include nystagmus, myopia, photophobia and astigmatism. The inability of the skin to tan with ultraviolet radiation is an added finding.

The occurrence of albinism in Negroes is a definite but relatively infrequent finding. Investigators have indicated that there is the possibility of some pigmentation occurring in patches when albinism affects races possessing greater amounts of cutaneous melanin.

The appearance of the oral tissues in albinism in Negroes has not been specifically noted in the dental literature. A description of the clinical and histologic appearances of these tissues in this symptom complex would appear to merit some consideration.

In a detailed search among Negroes in Macon County in South Alabama, three cases of albinism among Negroes were discovered. This represented the findings among a total Negro population of approximately 26,000. This proportion is similar to the estimates of 1 albino to every 10,000 of the population in North America, a ratio claimed to vary slightly with different countries and races. Sex incidence of albinism is said to be greater in males.

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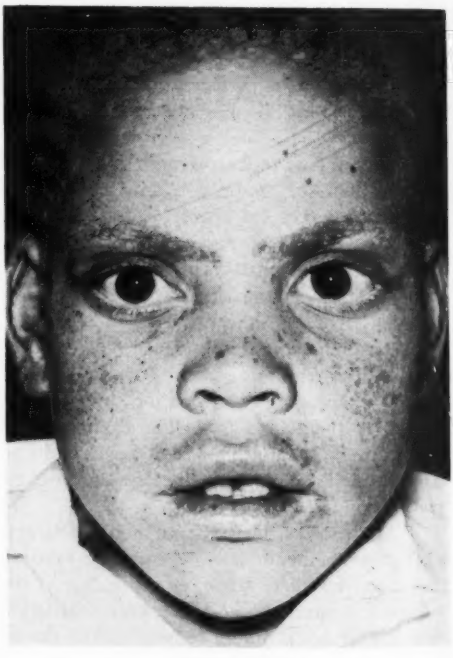
CASE HISTORIES

The following are the case histories of the three albinos mentioned. Special notation has been taken of the appearances of the oral tissues.

Case I J. D. A Negro male albino child. This patient was nine years of age, well-nourished and in apparent good health. He was one of three children of parents of very dark complexion. There was an abnormal whiteness of the skin, and on the face were several light-brown freckles. A few of these were present on the vermilion border of the lip (Fig. I). Among other clinical symptoms present were



Case 1. Figure 1.

Case 1. Figure 2.

an associated photophobia and nystagmus. Other than the brown maculae, there was no further clinical extraoral appearance of pigment. The patient's head was covered with reddish colored crinkly hair similar in texture and color to his eyebrows.

Intraoral examination revealed several partially erupted permanent teeth with no dental caries. There was a moderate amount of materia alba and soft food remnants. The soft tissues were clinically normal with an anticipated amount of inflammatory gingival hyperplasia accompanying tooth eruption (Fig. 2).

The gingival tissues were a light pale pink in color and there was no clinical evidence of melanogenous pigmentation.

A biopsy was made of gingiva excised from the right central-lateral inter-dental space. The tissue was stained for melanin.

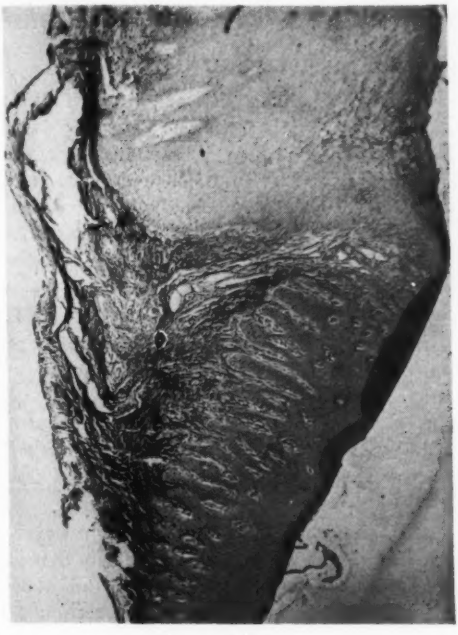
Histopathologic Report: (J. A. Ashhurst, M.D.) The specimen is a small crescent shaped piece of tissue, moderately firm, with approximate dimensions (10x2x2mm), and with a mucosal surface of a pale grayish white color.

Multiple sections of gingiva show focal acanthotic thickening of the surface epithelium. The epithelial cells are completely devoid of pigment (Fig. 3). Inflammatory cells in the stroma appear somewhat increased over what are usually present in gingiva, a condition consistent with gingivitis.

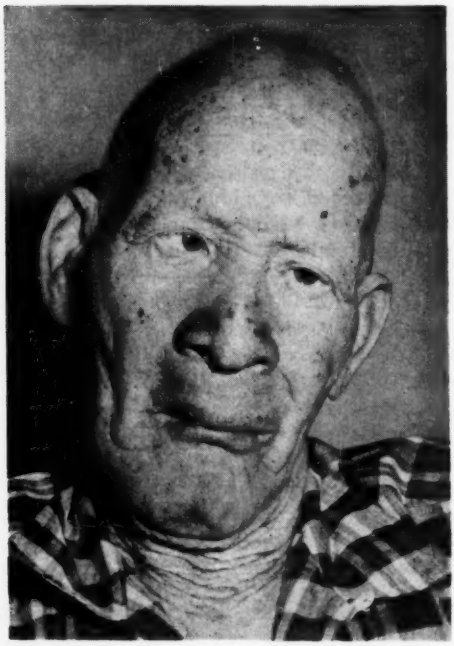
Case 2. H. H. a Negro male albino. This patient did not know when he was born, but from social service records, was adjudged to be around 65 years of age. He came to the hospital's outpatient department complaining of swelling of the extremities and shortness of breath upon exertion.

Physically, this patient was an elderly, thin, undernourished, chronically ill male. The skin of his face was an unnaturally pale yellow-white in color, and there were a few light brown maculae on the nose, cheeks and forehead. (Fig. 4). The skin on the neck was wrinkled and lay in several deep yellow folds, characteristic of the familiar cutis rhomboidea nuchae. There were concomitant myopia and nystagmus, and the pupils had a pink color. The sparse hair covering a balding head was crinkly and reddish yellow in color.

The medical examination indicated that this patient was affected with frank congestive heart failure, exertional dyspnea and peripheral edema. In addition, the patient had an enlarged liver.



Case 1. Figure 3.



Case 2. Figure 4.

Oral examination showed an edentulous mouth with completely healed ridges of moderate height. The patient indicated that the last of his teeth were removed about three years previously, but no dentures had been constructed. The ridges and other intraoral tissues were a very light pale pink in color, and completely devoid of any clinical oral pigmentation. (Fig. 5).

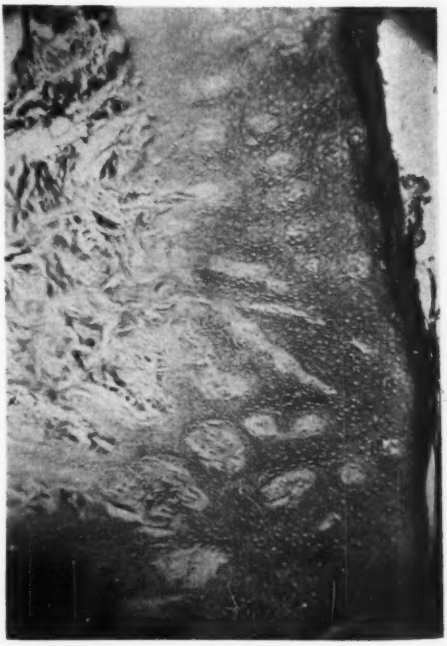
A section of the mandibular edentulous ridge was excised and sent for histopathologic preparation and staining for melanin.

Histopathologic Report: (J. A. Ashhurst, M.D.) Specimen is a small triangular shaped piece of light brown tissue that is mottled red. It measures (5x4x2mm).

Microsections of gingiva show slight hyperkeratosis. The basal layer is completely devoid of pigment. (Fig. 6) There was no indication of inflammation. The specimen is a section of normal gingiva, negative for basal cell pigmentation.

Case 2. Figure 5.

Case 3. L. B. Negro female albino. This 46 year old patient is a regular visitor to the outpatient department of the John A. Andrew Hospital. The patient first reported to the clinic complaining of dry skin with occasional furunculosis.



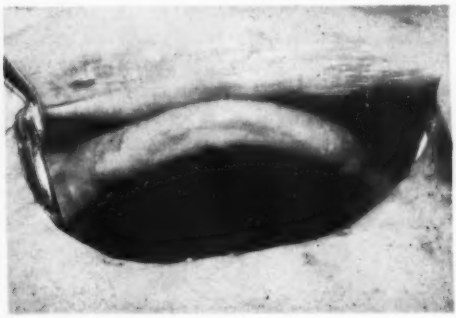
Case 2. Figure 6.

Case 3. Figure 7.

Physical examination showed a slightly built female of very pale pinkish white complexion, and white dry fuzzy hair (Fig. 7). The eye color was pink, and there was an associated photophobia and nystagmus. There were areas on the cheek, corners of the mouth and neck which were dry and scaly with circumscribed inflammatory reactions. This patient gave a history of inability to stand exposure to the sun even for short periods of time.

The medical diagnoses of this patient were (1) albinism with secondary dermatitis (2) multiple avitaminosis and pyoderma.

Her dental history indicates that there was "pain, extensive pyorrhea, gingival hyperplasia and a functional mastication" in 1956. The dental records reveal that full mouth extractions were accomplished on 5 April 1957. Current oral examination shows a completely edentulous mouth with well-healed ridges, of moderate height (Fig. 8). There is a well- developed symphysis menti, with an associated prognathism. Angular cheilitis and fine wrinkles in the neck were also present.



Case 3. Figure 8.

A section of the tissue covering the maxillary cuspid edentulous ridge was excised and sent for histopathologic examination.

Case 3. Figure 9.

Histopathologic Report: (J. A. Ashhurst, M.D.) Specimen is a small piece of gingiva measuring (6x4x4mm). It is grey-brown, firm and wedgeshaped. The larger surface is smooth.

Sections of this tissue show slight parakeratosis of the mucosa. No pigment is present in any of several serial sections (Fig. 9). The section is representative of normal gingiva, non- pigmented.

COMMENT

The clinical and histopathologic oral examinations of these three Negro albinos indicate that there is a general absence of melanin in the oral tissues. These findings would tend to support the general characteristics of albinismus insofar as the universal lack of melanin in the epidermis and other tissues are concerned. The histological picture of the oral tissues is not unlike that of vitiligo.

Studies of larger numbers of albinos are indicated with a view towards procuring further information about this abnormality.

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ALBINISMO: SU MANIFESTATIONES ORAL

per Dr. chir. dent. Clifton O. Dummett

SUMMARIO IN INTERLINGUA

Albinismo es definite como un complexo congenite e hereditabile de symptomas, le qual, in su forma complete, es characterisate per le absentia total e universal de melanina in le epidermis, le capillos, le iris, e le choroide. Consequentemente le pelle assume un apparentia anormalmente pallide e rosate, le iris pote esser rosate o blau, e le capillos blonde-platino. Frequentemente il ha affectiones concomitante, como nystagmo, myopia, photophobia, e astigmatismo. Le incapacitate del pelle a bronzar se sub radiation ultraviolette es un constatation additional.

Le occurrentia de albinismo in negros es un constatation definite sed relativemente infrequente. Varie investigatores ha indicate que in casos de albinismo in racias que possede relativemente plus grande quantitates de melanina cutanee, le presentia de pigmentation in maculas discrete remane possibile.

Le apparentia del tissus oral in albinismo in negros non ha essite notate specificamente in le litteratura dental. Un description del apparentia clinic e histologic de iste tissus in iste complexo de symptomas pare meritar alicun consideration.

Le examine oral clinic e histopathologic de tres negros albin indica un absentia general de melanina in le tissus oral. Iste constatationes tende a confirmar le characteristicas general de albinismo in tanto que illo concerne le manco universal de melanina in le epidermis e le altere tissus. Le tableau histologic del tissus oral non es dissimile a illo que es vidite in casos de vitiligine.

Studios de plus grande numeros de albinos es indicate a fin de procurar informationes additional in re iste anormalitate.

ASPECTS OF RESTORATIVE DENTISTRY WITH GENERAL ANESTHESIA*

JERRY J. ADELSON, D.D.S., ED.D.†

There are available in the profession, methods for the successful management of the recalcitrant, emotionally disturbed, and handicapped patient. Although there is great latitude in approach, the only significant variable in mode of treatment is associated with the degree and multiplicity of involvement. A basic knowledge and understanding of the handicapping condition often enables the practitioner to cope with the behaviorisms identified with the specific handicap, and a patient attitude and the correct psychological approach often overcomes some of the difficulties encountered.[1] Some patients, depending on the variance and degree of functional or organic debility, may require treatment supplemented with chemotherapy, or a combination of premedicants and analgesia.

A number of patients require restorative dentistry accomplished with the aid of general anesthesia. The gainful use of general anesthesia is predicated primarily upon patient need, and may be categorized as follows:

1. Management problems with extensive caries.

(a) This group includes children too young to comprehend or communicate. (Not only those patients of a young chronological age, but those who are of a low mental age, and function at a minimal social level are included in this category.)

(b) Those patients overfearful and not amenable to the establishment of a favorable conscious rapport. It would not be germane to the subject at hand to enumerate the varied types and degrees of emotionally disturbed patients whom the dental practitioner encounters; those patients whose magnified fears or behavior reject control by any and all accepted routine methods, and whose oral conditions necessitate mass restorative procedures, can be presumed to come within the scope of this category.

2. Severely and multipli-handicapped or disabled patients. Many handicapped patients can be treated with understanding and with the special aids available utilizing the methods of good dental management. The complete understanding and knowledge of the motivations, behavior characteristics, organic behaviorisms, and levels of functioning frequently permit the dental practitioner to treat the individual handicapped patient with modified-routine dental techniques.[1, 2, 3] However, patients whose mental and/or physical disability and excessive restiveness and lack of manageability prevent this routine or modified-routine handling can successfully be treated with the use of general anesthesia.

RATIONALE FOR APPROACH

With the aid of general anesthesia, patients may have their dental treatment completed in one or two sessions of forty-five minutes to one and a half hours. Experience has indicated that the majority of the non-handicapped problem-patients do not require this form of therapy more than once, and are usually sent back to the source of reference for routine dental management and maintenance, at completion of treatment.

At the initial consultation visit, a *complete and detailed* history is obtained. Thorough evaluation of the patient problem is accomplished with the aid of the following:

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(a) Nature of the handicap or disability (behavioristic or organic).

(b) Chief complaint (frequency, duration, intensity, and onset).

(c) Past dental history (approach, work accomplished, and level of acceptability.

(d) Educational history (level, special class information, and education problems).

(e) Past and present medical history and examination.

(f) Prescription and evaluation of all indicated medical laboratory tests.

(g) Dietary analysis.

(h) Oral hygiene and home care evaluation.

(i) Clinical oral examination.

(j) Radiographic examination. (On the occasions, when this procedure cannot be performed at the initial consultation visit due to lack of patient cooperation, it is carried out, as described below, during the anesthetic treatment session.)

The approach must be based on the individual need, and a basic, empathetic understanding of the patient, his behaviorisms, handicap, or disability, is vital for a successful diagnosis, prognosis and therapeutic "blueprint."

At this consultation visit, thorough education of the patient and/or parent is effected, with detailed instructions on (a) tooth-brushing, oral hygiene and home care, (b) diet changes and requirements, and (c) future maintenance.

Pre-anesthetic medication (when necessary) and detailed pre-treatment instructions are given to the patient or parent. (There is no given dependable formula, in the knowledge of the author, which can be used categorically for the use of medications for "groups" of patients. Extreme care and attention to the details circumscribing the *individual needs is the only valid basis for prescription.*)

With understandable exception, the second visit is usually for treatment. A clinical, physical examination is completed. The patient is premedicated as mentioned above according to previous instructions.

The entire medical and dental staff immediately concerned with the patient are unobtrusively gowned, scrubbed, and ready to fulfill their responsibilities. The office must function with efficiency and organization, and be equipped and maintained on a hospital level, but additionally, have an atmosphere and environment designed to preclude fear and allay apprehension.

Figure 1a. A three and a half year old normal child with rampant caries, who could not be treated by routine methods.

METHODS AND MATERIALS

The anesthetic techniques employed are, of course, dependent upon the individual patient requirement, the controllable variables consistent with age, type, physical and mental condition, and degree of restorative need. Anesthetic induction may be accomplished through the inhalation (nasal, or naso-oral), intravenous, or rectal routes. Importantly, regardless of choice of route or agent, the administration is characterized by a gentleness, smoothness and non-traumatic approach. Clinical experience indicates that often, with the judicious use of pre-anesthetic medication, less anesthetic is required than without it. The pre-anesthetic medication consists of hypnotic and/or soporific drugs routinely combined with parasympathetic depressants. These are prescribed and administered according to the *individual need.* Fear is effectively eliminated, induction facilitated, undesirable reflexes depressed, a completely dry field for the restorative dentistry provided, and as described above, the effective

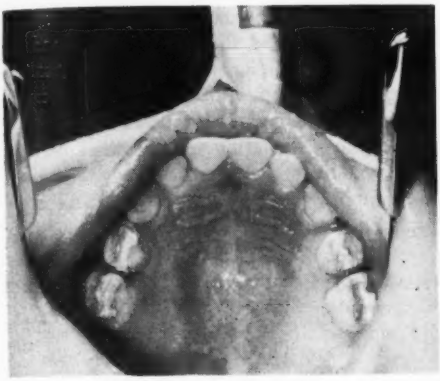

Figure 1b. Utilizing general anesthesia, (see endotracheal tube at top of picture) a clinical oral examination was performed, radiographic series obtained, and all caries removed and restored in a single session.

amount of anesthetic required is decreased. A highly desirable sequella in children is the amnesic effect obtained which eliminates all untoward memory of the treatment visit.

Naso-endotracheal intubation is performed for the patient requiring massive restorative procedures. The intubation is accomplished, after induction, to provide a patent airway and prevent aspiration of debris. The endotracheal tubes and the newer anesthetics and adjunctive agents provide for a light level of maintenance of anesthesia thereby reducing to a minimum the post-operative recovery period. The head is fixed into position with an adjustable headband and a semi-closed, non-rebreathing anesthetic apparatus. Fixing the head after induction and intubation provides the necessary security for controlled, pre-operative radiographic series exposure—a mandatory adjunct to the successful execution of the restorative procedures. No explosive gases are used, and there are no contraindications to this procedure. Plastic film holders and an elastic head-bandage are employed in obtaining the radiographic series. Ultrafast film and warm developing and fixing solutions reduce the consumption of time. The total time-lapse from the induction to evaluation of the radiographs rarely exceeds five to five and a half minutes.

OPERATIVE APPROACH

The maxillary and mandibular arches are divided into quadrants. A throat pack is carefully placed to facilitate post-operative cleansing of the mouth and throat. A rubber bite-block is inserted to maintain the oral opening and provide for adequate visual and operative access.

The upper and lower right quadrants are treated initially with a round-ended, cross-cut fissure carbide bur at high speed in a washed field. With vacuum suction and intubation, there is no aspiration, which additionally, makes possible the advantageous use of a more powerful stream of water as a coolant. Thus, a field for continuous, operative preparation is provided with an increased flow of water precluding the operative hazard of overheating the teeth. The need for frequent change of rotary instruments is eliminated and the excavations, outline and convenience forms are completed in both upper and lower quadrants smoothly and without interruption. Any remaining deep caries, are removed under decreased operative-instrumentation speed, with air as the coolant.

The preparations in both the upper and

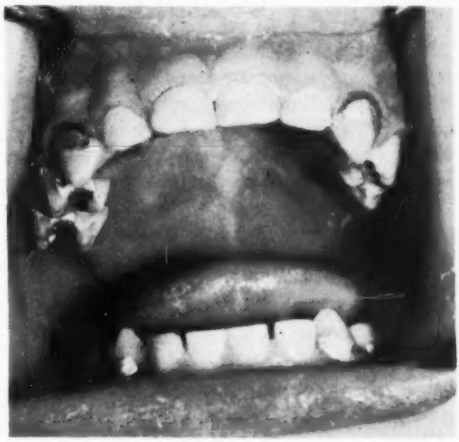

Figure 1c. Because of faulty home care and caries susceptibility, amalgam restorations have been inserted, even in the anterior teeth, for permanence. Note the greater extension into cleansable areas, for added cleanliness.

Figure 2a. A four year old problem patient with enamel hypoplasia and rampant caries. Note the fistula above the maxillary right first deciduous molar. Additionally, there were four vital carious exposures for which pulpotomies were performed. At the initial session, the abscessed tooth was removed, and alginate impressions and a centric bite obtained on the anesthetized patient.

lower quadrants are dried and sterilized. A protective lining of calcium hydroxide is carefully placed on the pulpal walls of the preparations. Zinc oxyphosphate cement bases are inserted in all deep preparations, in sequence.

At this point, all indicated pulp capping and/or pulpotomies are performed and completed. A significant clinical corollary that lends itself gainfully to the overall procedure is that, with the dry field obtained with the pre-operative administration of parasympathetic depressant drugs, the need for rubber dam is obviated. The toilet of the preparations is then completed, cement bases smoothened, and all excess cement is carefully trimmed from the walls and margins of the preparations. Simultaneous restoration of all the teeth, including contiguous, proximal cavities, is facilitated with the use of the spring-type matrix retainer. Double-ended amalgam carriers, (sequence-replenished) with well-expressed amalgam, are used, and the filling material condensed with an automatic malleting device. With the completion of the restorative procedures on the upper and lower right quadrants, the mouth is cleansed of all debris with meticulous care, the rubber bite-block removed, and the final carvings and occlusion are carefully checked in the terminal hinge position and through the various excursions of functional movement.

The bite-block is removed on the right side of the mouth and the procedures are repeated with duplicatable operative discipline for the upper and lower left quadrants.

RECAPITULATION OF THE OPERATIVE SEQUENCE

1. Pre-operative radiographic series taken immediately after induction.
2. Prophylaxis, scaling, and curettage, when indicated.
3. Pulp therapy is carried out during the restorative phase as described above.
4. Extractions (if indicated) are performed as the final step before the post-operative radiographs are taken. *Importantly,* post-operative radiographs are taken routinely as a final check on the restorations.
5. Final debridement is performed, occlusion checked, bite-block and throat-pack removed, and extubation effected.

At the completion of the procedure, the patient is given the necessary recovery-room time and the parents brought in immediately. This is most important to both children and handicapped patients for the prevention of fear and anxiety at separation, since particularly in many cases, the parent represents their only source of security. It often is of equal importance to the parents, who frequently present attitudes of overanxiety and overprotection.

The overall procedure, described above, provides for a complete dental service during a single visit on an ambulatory basis, successful negation of fear and psychological trauma.

PRACTICAL CLINICAL ADVANTAGES OF APPROACH

1. Provides a light level of anesthesia, and a rapid recovery period.
2. Provides a complete, one visit ambulatory service for those patients who are

severe management problems with rampant caries. (Figures 1, 2)

3. Provides a compatible experience for those patients who reject treatment with routine methods.
4. Provides for the child and handicapped patient an amnesic and non-traumatic experience, with a brief and unknown separation from the parent. Hospitalized, a child must be separated from the parent for extended conscious periods, even overnight, at best, an undesirable experience. With few exceptions, hospitals do not accept severely mentally handicapped or violent patients.
5. Provides a reversible procedure with the necessary safeguards by the "team" approach.

Addtionally, fixed bridge prosthesis and full coverages may be constructed for severely retarded, emotionally disturbed, brain injured, or multipli-handicapped adults, who cannot undergo dental therapy. The more complicated restorative procedures may require three or four sessions, during which chemamnesia and general anesthesia are often employed.

In utilizing restorative procedures with general anesthesia, for the categories of patients previously described, the operator must be geared to the "team approach." Successful management by the team directs the following:

1. For children who are non-handicapped, but who are management problems with deep, rampant caries; every effort should be made to refer them back to routine maintenance therapy and management, after the single complete treatment with general anesthesia.
2. Treatment, pre-operative and post-operative handling must be non-traumatic, and provide an amnesic experience with as little separation as possible from the parent, under conditions, and in an environment which encourage well-being and lack of fear.
3. The premedication and general anesthetic techniques used, *must* vary with the individual patient need. (There is no stock-formula approach.) A well-rounded knowledge and competence in pharmacophysiology and anesthesiology are necessary to the dental practitioner performing this type of service. This responsibility is shared with a competent anesthesiologist and nursing staff. Conscious awareness of the physical, mental, and emotional limitations and disabilities of the patient are the common denominators of this "team' approach. This approach must be carried out not only in diagnosis, but in actual treatment, and during the brief recovery period by the operator, anesthesiologist and auxiliary staff.
4. A thorough knowledge of the principles of pedodontics is necessary, and the oral and dental signs of a handicap must be evaluated before treatment is instituted, since considered clinical modifications may be required during treatment. For example, lack of knowledge that the deciduous (and permanent) dentition in a mongoloid child are usually delayed in eruption time up to two years, might lead to an erroneous diagnosis of over-retention, which could result in ill-advised premature extraction, thereby encourag-

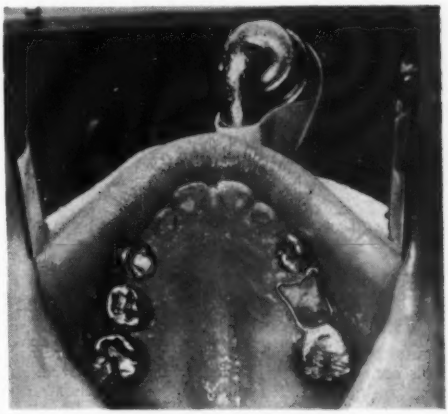

Figure 2b. At the second session, with the aid of general anesthesia, all caries were removed, pulpotomies performed, and preconstructed stainless steel crown and space maintainer inserted. Again, amalgam restorations were used anteriorly for permanence.

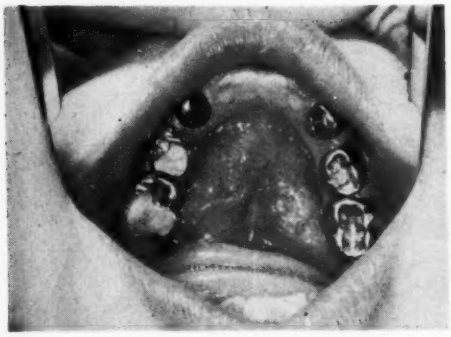

Figure 2c. A view of the opposing jaw where high spots occur, the cusps of the crowns are removed, and amalgam inserted and carved to occlusion.

ing a progressive, malocclusive maxillo-mandibular relationship.

5. With the many uncontrollable factors encouraging poor home care and oral hygiene, every instructive precaution must be made to provide an oral environment consistent with the maintenance of the restorative dentistry accomplished for handicapped patients. Modifications in outline form and restorative materials, may be necessary due to faulty oral hygiene, poor nutrition, and lack of chewing ability in some of the more disabled patients. For example, greater extension in preparation (Figure 1C) stainless steel full coverages (Figures 2B, 2C), or use of amalgam in the anterior teeth may be the approach best suited to fit the need. Esthetics, in many cases, are sacrificed for permanence of the restorations and general oral cleanliness, maintainable with minimum effort.
6. Successful therapy depends on detailed parent education, adequate home care and diet guidance instruction. Two or three month recall examination and prophylaxis is recommended for the severely handicapped.

COMMENTARY

It is the dual responsibility of the dental practitioner to provide continuous dental care and maintain the oral cavity in a state of health, and to teach and train the patient to accept necessary dental treatment.

When it proves impossible to fulfill these responsibilities, due to various conditions and/or circumstances, restorative dentistry with general anesthesia provides a solution to the immediate dental needs of the non-handicapped problem-patient. Frequently, this establishes the necessary receptiveness and affords the time for successful training and teaching of acceptance of dental procedures.

Additionally, this services provides for the complete dental treatment of those handicapped patients who cannot be treated in any other manner. The dental contribution to the total need of these patients fulfills a vital requirement and often proves to be of extraordinary value in their overall function.

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ASPECTOS DE DENTISTERIA RESTAURATIVE CON ANESTHESIA GENERAL

per Dr. chir. dent. e Dr. ped. Jerry J. Adelson

SUMMARIO IN INTERLINGUA

In nostre profession es disponibile methodos pro le maneamento del patiente recalcitrante, emotionalmente disturbate, e impedimentate. Ben que il ha un grande latitude in le approche al problema, le sol variabile significative in le modo de tractamento del patiente es associate con le grado e le multiplicitate de su involvimento. Un cognoscentia fundamental del condition impediente frequentemente permitte al therapeuta anticipar le reactiones associate con le impedimento specific, e frequentemente un attitude patiente e un correcte approche psychologic va superar alicunes del difficultates que es incontrate. Alicunes del patientes, secundo le varietate e le grado de lor debilitate functional o organic, require possibilemente un tractamento supplementate de chimotherapia, o forsan un combination de premedication e analgesia.

Le therapeuta dental ha le duple responsabilitate de (1) provider continue supervision e tractamento dental e de mantener un stato de sanitate in le cavitate oral, e (2) instruer e accostumar le patiente a acceptar le necessari tractamento dental.

Quando, a causa de varie conditiones e circumstantias, il deveni impossibile complir iste responsabilitates, le dentisteria restaurative con anesthesia general provide un solution al immediate requirimentos dental del patiente qui es difficile sed non impedimentate. Frequentemente isto establi le necessari receptivitate e provide le tempore pro successo in guidar le patiente a acceptar le procedimentos dental.

In addition, iste servicios face possibile le complete tractamento dental de ille patientes impedimentate qui non pote esser tractate alteremente. Le contribution del dentista al necessitates total de iste patientes compli un requirimento vital, e frequentemente se monstra de extraordinari valor in su contribution a lor functionamento total.

DRUGS USED IN THE CONTROL OF DENTAL PAIN*

MARTIN BARR, B. Sc., M. Sc., Ph.D.†

Pain is the most common complaint of patients to their physicians and dentists. The proper management of pain has been and will continue to be one of the most important obligations of the practitioner to his patient.

PAIN

Physiologically pain is a specific sensory experience which is mediated through nerve structures which are separate from those which mediate other sensations such as touch, pressure, heat and cold. It is composed of at least three phenomena: (1) initiation and transmission of stimuli from the periphery to the thalamus; (2) the perception of pain which is the result of the effect of the stimuli on the thalamocortical complex; and (3) the reaction to pain which is also a function of the thalamocortical complex. It is obvious, therefore, that anything which effects the thalamocortical complex might alter the sensation of, and/or the reaction to pain.

The best treatment for the relief of pain is to remove the cause. This is not always possible. Often, all that is required to remove pain are physical measures such as heat, cold and immobilization, or the use of non-narcotic analgesics such as aspirin, phenacetin, Darvon or Zactirin. Other drugs, such as antibiotics, corticosteroids, psychotherapeutic agents, and antihistamines are valuable in the management of specific etiologic factors in the production of pain. Other than blocking or cutting nerve pathways and the use of anesthetics, procedures which are not generally desired, there remains the use of narcotic analgesics to relieve severe pain.

This paper will be limited to a brief discussion of non-narcotic and narcotic analgesics with a view toward their application in alleviating dental pain. The roles played by other therapeutic agents as the corticosteroids and antihistamines, etc. in relieving pain should not be disregarded.

THE IDEAL ANALGESIC

As with any group of therapeutic agents, it is usually desirable to list the requirements of an ideal agent in a particular class. This can be done readily with the analgesic drugs.

An ideal analgesic drug should be non-addicting and free from tolerance. It should be effective orally, have a rapid onset of action, a controlled duration of effect, and an appropriate intensity of analgesia. The analgesic should act specifically on the pain centers so that an analgesic and a sedative effect may be differentiated. There should be few undesirable reactions to the drug, it should be excreted, detoxified or eliminated without primary dependence on hepatic or similar functions for metabolic degradation. The ideal analgesic should be reversible in that a suitable antidote could stop or abolish its action.

NON-NARCOTIC ANALGESICS

Acetylsalicylic Acid (Aspirin)

Aspirin was first made in 1899 and its popularity as an analgesic has constantly grown. In 1958, about 10,000,000 pounds of aspirin were consumed in the United States, or enough to give a headache-relieving dose every day of the year to every adult in the country. Aspirin acts by raising the pain threshold, possibly through depression of pain centers in the thalamus.

Aspirin is absorbed from the gastrointestinal tract, peak levels being obtained in less than one hour. The acid of the stomach causes a partial hydrolysis of the ester. The ester circulates in the blood and further hydrolysis oc-

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curs in that fluid. It is thought that analgesia is associated with the presence of the acetylated molecule in the blood.

Aspirin is relatively non-toxic in average doses. Allergy does occur to this drug. Other side-effects may include sweating, thirst, nausea, vomiting, skin rashes and tachycardia.

The usual dose of aspirin is 10 grains by mouth every 4 hours. It has been claimed that the administration of buffering agents with aspirin increases its rate of absorption and reduces the incidence of nausea and vomiting.

Combinations of aspirin with another non-narcotic analgesic such as acetophenetidin (phenacetin) and caffeine have been commonly employed for their analgesic effect. Phenacetin, like aspirin, is a salicylate, p-ethoxy acetanilid. It appears to be about as active as aspirin. Its analgesic activity is believed to be due to N-acetyl-p-aminophenol, a degradation product. Aspirin and phenacetin appear to have a synergistic action in relieving pain. The value of caffeine in such a combination is doubtful. In the treatment of headaches, caffeine probably adds to the value of the combination by dilating the cerebral blood vessels (the constriction of which may lead to headaches) and to slight cortical stimulation. There is some opinion that the use of caffeine in combinations of analgesics may actually increase dental pain due to its cortical stimulation properties. Aspirin, Phenacetin and Caffeine Capsules and Tablets usually contain 3½ grains of aspirin, 2½ grains of phenacetin and ½ grain of caffeine. The usual dose is 2 tablets or capsules every four hours.

Clinically, almost every ache and pain, responds, to a certain extent, to aspirin. There is little doubt, however, that its analgesic effect is limited and that other agents are necessary to relieve severe pain.

Dextro Propoxyphene Hydrochloride (DARVON-LILLY)

Darvon is a -d-4-dimethylamino-1, 2-diphenyl-3-methyl-2-propionoxybutane hydrochloride. There are four steroisomers, of which only this one possesses analgesic activity.

Darvon is effective orally shortly after its administration. It is claimed that this compound is as effective as an analgesic, mg. for mg. to codeine and that there is no difference in the duration of action of the two drugs.

Darvon may be used in combination with aspirin and such a combination gives a greater analgesic action than either drug when used alone.

No addiction to Darvon has ever been observed. Also, such effects as nausea, vomiting and constipation (frequently produced by opium alkaloids) have not been detected. No contraindications to the use of Darvon have been reported.

Darvon is given orally in the usual adult dosage of 32 mg. every 4 hours or 65 mg. 3 or 4 times daily, whichever is most desirable. Darvon Compound, which is a combination of Darvon and aspirin, is usually given in a dosage of 1 or 2 capsules 3 or 4 times a day.

Darvon is available as Pulvules "Darvon" *(Lilly)* as 32 mg. and 65 mg. capsules, and as Pulvules "Darvon Compound" (Lilly), each containing 32 mg. Darvon, 162 mg. (2½ gr.) phenacetin, 227 mg. (3½ gr.) aspirin and 32.4 mg. (½ gr.) caffeine.

Ethoheptazine Citrate (ZACTANE-WYETH)
Ethoheptazine Citrate with Aspirin (ZACTIRIN-WYETH)

Ethoheptazine citrate is the newest addition to the non-narcotic analgesic armamentarium. It is chemically 4-phenyl-4-carbethoxy-N-methyl hexamethylenimine citrate. It is an unusual structure in that it has a seven-membered ring containing one nitrogen (hexamethylenimine ring).

Ethoheptazine citrate is fully effective orally within 20 minutes after its administration and its effect generally lasts 4-6 hours. It has been reported that the analgesic effect of 150 mg. of this compound is approximately equal to 30 mg. of codeine. It is used almost exclusively in combination with aspirin (Zactirin) and such a combination gives a greater analgesic effect, equivalent to 30 mg. of codeine and 10 grains of aspirin.

One of the principal indications for Zactirin

is in the treatment of dental pain. It does not produce sedation, constipation, addiction or tolerance in patients as do codeine and other narcotic analgesics.

Ethoheptazine citrate is available in combination with aspirin as Zactirin Tablets (Wyeth), each containing 75 mg. of ethoheptazine citrate and 5 gr. aspirin and without aspirin as Zactane Tablets (Wyeth), each containing 75 mg. ethoheptazine citrate.

The usual oral dosage of Zactirin and Zactane is 1 or 2 tablets 4 times a day.

N-Acetyl-p-Aminophenol

N-acetyl-p-aminophenol is similar in its action to phenacetin. As has been explained previously, it is believed that phenacetin is broken down to N-acetyl-p-aminophenol in the body and that this substance is responsible for the analgesic activity of phenacetin.

N-acetyl-p-aminophenol is present in Trigesic Tablets (Squibb) together with aspirin and caffeine. The usual dosage of these tablets are 2 tablets every four hours.

Other Non-Narcotic Analgesics

There are other non-narcotic analgesics available on the market but none of these have been proven to be as valuable as those already discussed in the treatment of dental pain. Among these may be mentioned salicylamide, acetanilid, antipyrine, aminopyrine and phenylbutazone.

NARCOTIC ANALGESICS

The narcotic or addicting analgesics fall into two classes: (1) the derivatives of opium, and (2) the "opiods" or synthetic narcotic analgesics. Members of both of these classes of analgesics are additive-forming and are useful in the treatment of severe pain. A prescriber of these drugs must possess a narcotic licence.

Derivatives of Opium

Opium itself does not find much use in therapeutics today as an analgesic but the alkaloids of opium are widely employed.

Morphine (Sulfate or Hydrochloride)

Morphine produces a specific depression of the sensation of pain. It accomplishes this by a selective action on the sensory areas of the cerebral cortex.

Morphine is active when taken orally and may be considered as one of the most potent analgesics. Its duration of action is 4-5 hours. Morphine produces sedation which is useful in many instances but which is often considered an undesirable side-effect.

Morphine produces many side-effects which has limited its use in the treatment of dental pain. It markedly depresses respiration, causes constipation and nausea and vomiting. The addiction liability to morphine is also very great.

The usual oral dose of morphine salts is 15 mg. every 4 hours as necessary. In cases of severe pain, the salt may be administered parenterally for quicker action in the same dosage.

Morphine salts are available as tablets containing 5, 8, 10, 15 and 30 mg. of salt, and as an injection containing 10, 15, 20 or 30 mg. of the salt per ml.

Dihydromorphinone Hydrochloride
(DILAUDID-KNOLL)

Dilaudid is about 5 times as potent an analgesic as morphine. Its duration of action is about 3 hours.

Dilaudid produces a moderate degree of sedation, not as great as that produced by morphine. It also produces a moderate amount of nausea and vomiting and marked respiratory depression. Its addiction liability is very great. It is effective in the treatment of severe pain.

The average dose of Dilaudid orally is 2.7 mg. It it available as oral tablets (2.7 mg.) for such use. It may also be administered by injection and is available in 1 ml. ampuls containing 2 or 3 mg., and in a 10 ml. multiple dose vial containing 2 mg. per ml. as the sulfate Dilaudid is also available as 1, 2, 3 and 4 mg. tablets for hypodermic use. For those not able to swallow tablets, a suppository of Dilaudid is available for use, containing 2.7 mg. per suppository.

Methyldihydromorphinone Hydrochloride (METOPON HYDROCHLORIDE)

Metopon is 2-3 times as analgesic as morphine but only half that of Dilaudid. It is milder in its sedative and side-effects than both morphine and Dilaudid. Its addiction liability is great.

Metopon is equally as effective orally as parenterally. It is useful in the treatment of moderate-severe pain.

The usual dosage of Metopon is 3-6 mg. orally. It is available as a 3 mg. capsule.

Methylmorphine (CODEINE SULFATE & PHOSPHATE)

Codeine is methylmorphine. It is usually used as the sulfate or phosphate salts.

Codeine is about 1/6th as effective an analgesic as morphine. Its duration of action is 3-4 hours. As contrasted to morphine, its sedative effect is mild.

Codeine does not produce the same degree of side effects as does morphine. It does have a moderate constipating ability. Although its addiction liability is low, addiction to codeine does occur.

The usual oral dose of codeine salts is 30 mg. every 4 hours as needed. It is effective only in the treatment of mild-moderate pain.

Codeine phosphate and sulfate are available in tablets containing 15, 30 and 60 mg. of salt.

Combinations of codeine salts with aspirin, phenacetin and caffeine are useful in the relief of pain. Empirin Compound with Codeine Tablets (Burroughs Wellcome) are popularly employed and contain in addition to aspirin, phenacetin and caffeine, either 1/8, 1/4, 1/2, and 1 gr. codeine phosphate. Other popular analgesic combinations containing codeine include Acetidine Tablets and Capsules with Codeine, (Merck Sharp & Dohme) 1/4 and 1/2 gr. codeine salt per tablet or capsule, and Trigesic Tablets with Codeine (Squibb), containing 1/4, 1/2 and 1 gr. of codeine salt per tablet.

Dihydrocodeinone Bitartrate (DICODID-KNOLL)

Dicodid is 1/2 as analgesic as morphine. It has only mild sedative action and tendencies to produce constipation, nausea and vomiting and respiratory depression. It has a low addiction liability although greater than that for codeine. Dicodid is generally used as an antitussive and not as an analgesic.

Dihydrocodeine Bitartrate (RAPACODIN-KNOLL)

Rapacodin is 1/3-1/6th as effective an analgesic as morphine. It has only mild side-effects and sedative properties. It has a lower addicting tendency than codeine. It is effective in the relief of mild-moderate pain.

The recommended oral dosage of Rapacodin is 20 mg. repeated every four to six hours if necessary. Doses up to 60 mg. have shown rare side effects.

Rapacodin is available as 10, 20 and 40 mg. tablets; as 1 ml. ampuls containing 30 mg., and as a 20 ml. multiple dose vial containing 30 mg. alkaloidal salt per ml.

Ethylmorphine Hydrochloride (DIONIN)

Dionin is comparible to codeine as an analgesic and also in other respects. It is seldom used systemically today and will not be discussed any further.

Pantopon (Roche)

Pantopon contains all of the alkaloids of opium in the same proportion in which they occur in nature, but freed from inert or irritating waxes, gums and resins.

In most instances, 1/3 grain of Pantopon is therapeutically equivalent to 1/4 grain of morphine. There is less likelihood of side reactions although there is still a high incidence of nausea produced.

The usual dosage of Pantopon is 10 to 20 mg. every 4 hours as needed orally or by injection. It is available as a 10 mg. oral tablet, as a 1 ml. ampul containing 20 mg, and as 20 mg. hypodermic tablets.

OPIOD ANALGESICS

Levorphanol (LEVO-DROMORAN, ROCHE)

Schnider and Grüssner synthesized Levo-Dromoran in 1949. All of the analgesic activity

of this compound resides in the levo-optical isomer.

Levo-Dromoran is the most potent of the current available opiods. It is 5 times more potent as an analgesic than morphine. Its duration of activity in the body is 6-8 hours.

Levo-Dromoran has a moderate sedative effect in patients. It has the ability to markedly depress respiration in substantial dosages and produces only mild constipation and infrequently nausea and vomiting. Its addiction liability is very great.

Levo-Dromoran is effective by any route of administration in the relief of severe pain. The usual dosage is 2-3 mg. orally or subcutaneously as needed.

Levo-Dromoran is available as 2 mg. oral tablets, as 1 ml. ampuls containing 2 mg., and as 10 ml. vials containing 2 mg. per ml.

Methadone Hydrochloride (DOLOPHINE HYDROCHLORIDE, LILLY)

Methadone is a heptanone derivative and is an entirely different type of compound from morphine. It is chemically 4, 4-diphenyl-6-dimethylamino-heptanone-3 hydrochloride.

Methadone is superior to codeine and meperidine as an analgesic and at least as potent as morphine. It was the first opiod to have good effectiveness when given orally. The duration of action of methadone is 4-5 hours.

Methadone has only moderate sedative action on the body but it is capable of markedly depressing respiration in high dosages. It sometimes produces constipation, nausea and vomiting. Its addiction liability is very great.

In general, methadone is considered as being equal in potency to morphine in the relief of severe pain with less severe side-effects.

For moderate pain, 2.5 mg. of methadone given orally are usually effective for 4-6 hours. More severe pain may be controlled by oral or parenteral administration of 5 mg. doses. Very severe pain may require 10 mg.

Methadone hydrochloride is available under that name from various manufacturers and as Dolophine Hydrochloride (Lilly) as 2.5, 5, 7.5 and 10 mg. tablets; 1 ml. ampuls containing 10 mg., 20 ml. rubber-stoppered ampuls containing 10 mg. per ml., and as a syrup containing 10 mg. per 30 ml.

Meperidine Hydrochloride (DEMEROL, WINTHROP and BREON)

Demerol is ethyl 1-methyl-4-phenylpiperidine-4-carboxylate. It is unrelated chemically to morphine. It was synthesized during a search for anti-spasmodic drugs similar to atropine. During routine tests the compound was found to also possess analgesic properties.

Meperidine hydrochloride is 1/10th as analgesic as morphine. It has a duration of action of 3-4 hours. However, it produces only very mild side effects. Its addiction liability is great, however.

Meperidine is effective orally and parenterally for the relief of moderate to severe pain. The average dose of meperidine is 100 mg. orally or subcutaneously.

Meperidine hydrochloride is available as Demerol (Winthrop) as 50 and 100 mg. tablets, as an injectable of various strengths and as an elixir containing 5 mg. per 5 ml. It is also available from Breon as 50 mg. tablets and as an injection containing 50 mg. per ml.

Recently Winthrop has made available A.P.C. with Demerol Tablets, each tablet containing 30 mg. of Demerol. The usual adult dose is 1 or 2 tablets, repeated if necessary, at intervals of 3-4 hours. The rationale of this combination is self-evident.

Anileridene (LERITINE, MERCK SHARP AND DOHME)

Leritine 1-(4-aminophenethyl)-4- phenylisonipecotic acid ethyl ester was the first example of a synthetic narcotic drug where potency has been increased by the addition of an aminophenethyl group to a chemical structure already having analgesic properties. In Leritine, 4-aminophenethyl replaces the methyl radical of meperidene.

The potency of Leritine lies between that of meperidene and morphine, being about 2½ times that of the former and approximately ¼th that of the latter.

Leritine gives only occasional side effects and

is useful in the relief of moderate to severe pain. It has great addiction liability.

The usual oral dose of Leritine is 25-50 mg., repeated every six hours is necessary. The same dosage is generally recommended for subcutaneous and intramuscular injection.

Leritine is available as 25 mg. tablets and as an injection containing 25 mg./ml. in 1, 2 and 30 ml. ampuls.

Alphaprodine Hydrochloride (NISENTIL, ROCHE)

Nisentil, a piperidene derivative, is about 1/3rd as analgesic as morphine and has a duration of action of 2-3 hours. It rarely causes sedation, nausea and vomiting, or constipation. The addiction liability to Nisentil is moderate. It is recommended for the relief of moderate to severe pain.

Nisentil is not effective when administered orally. It is usually administered intravenously if very rapid and brief analgesia is desired in a dosage of 20-30 mg. If a rapid-acting, longer-acting analgesia is desired, 30-60 mg. is usually administered subcutaneously.

NARCOTIC ANTAGONISTS

In recent years, several drugs have been introduced which are known as narcotic antagonists. These drugs are effective as "antidotes" in case of inadvertant overdosage, intolerance or idiosyncrasy reactions to the narcotic drugs. In view of the fact that respiratory despression is a prime cause of death following overdosage, these drugs, which antagonize the depressing effects of the narcotics, have proven to be especially valuable antidotes.

There are two narcotic antagonists of importance in the therapeutic armamentarium, both allyl derivatives. These are Nalline Hydrochloride (Merck Sharp & Dohme) and Lorfan Tartrate (Roche).

Nalline is available in 1 and 2 ml. ampuls, each ml. containing 5 mg. Nalline The average dose of this antagonist is 5-10 mg. I.V. with not more than 40 mg. at one dose. Nalline is also useful as an analgesic.

Lorfan is available in 1 ml. and 10 ml. ampuls, each ml. containing 1 mg. of Lorfan. The average dosage is 1 mg. I.V. and if required, 1 or 2 additional 0.5 mg. doses may be given.

The suggested total dosages of antagonists to be used in opiate depression in adults are shown in Table I. These ratios allow for the calculation of the total anticipated amount of antagonist to be used, when the dose of the narcotic is known.

TABLE I. SUGGESTED RATIOS BY WEIGHT OF NARCOTICS TO ANTAGONISTS

Narcotic	*Nalline* *Narcotic: Nalline*	*Lorfan* *Narcotic: Lorfan*
Morphine	10:1	50:1
Demerol	20:1	80:1
Methadone	10:1	50:1
Nisentil	10:1	50:1
Levo-Dromoran	2:1	10:1

DROGAS EMPLEATE IN LE SUBJUGATION DE DOLORES DENTAL

per Dr. phil. Martin Barr (B.Sc., M.Sc.)

SUMMARIO IN INTERLINGUA

Dolor es le plus frequente gravamine describite per le patiente a su medico o dentista. Le proprie manipulation del dolor ha semper essite e va continuar esser un del plus importante obligationes del therapeuta verso su patiente.

Physiologicamente, le dolor es un specific experientia sensori mediate per specific structuras neural. Istos es distincte ab alteres que effectua le mediation de altere sensationes, per exemplo le sensation del contacto, del pression, del calor, e del frigor. Le phenomeno physiologic del dolor es componite de al minus tres componentes: (1) Le initiation e transmission de stimulos ab le peripheria al thalamo; (2) le perception de dolor, le qual es le resultato del effecto del stimulos super le complexo thalamocortical; e (3) le reaction al dolor, etiam un function del complexo thalamocortical. Obviemente, dunque, qualcunque cosa que affice le complexo thalamocortical pote etiam alterar le sensation del dolor e le reaction al dolor.

Iste articulo es limitate a un breve discussion de analgesicos narcotic e non-narcotic con respecto a lor application al alleviation de dolores dental. Le rolos de altere agentes therapeutic—le corticosteroides, le histaminas, etc.—non debe esser negligite.

Medical Views on Oral Problems

THE RESULTS OF INJECTING HOT WATER INTO THE GASSERIAN GANGLION FOR THE RELIEF OF TIC DOULOUREUX*

The author reports on 185 patients with paroxysmal trigeminal neuralgia (tic douloureux), who were treated by injecting hot water into the gasserian ganglion at the Jefferson Medical College Hospital in Philadelphia between 1953 and 1958. Relief from the paroxysmal tic pain has been complete in all but 7 patients. Five of these were among the first 30 patients, and they were relieved by operation. It is probable that at least 3 of these, if not all of them, could now be relieved by injection. There has been no operation for relief of the pain in the last 155 patients treated by injection. Paralysis of the motor nerve to the muscles of mastication occurred in most, but not all, of the patients; complete regeneration of the motor nerve occurred within 3 or 4 months. There occurred suspected or slight temporary irritation of the cornea. Permanent slightly diminished vision was caused by clouding of the cornea in 2 patients. Slight paresis of the extraocular nerves occurred in 8 patients, but complete recovery always occurred in less than 5 months. Herpes occurred in more than 50% of the patients, usually on the labial mucosa at the corner of the mouth. It appeared 3 days after the injection and disappeared within 3 weeks. Some patients of advanced age or with an anxious, tense personality complained of numbness, stiffness, itching, burning, and crawling sensations over the anesthetized area. Injection of hot water into the gasserian ganglion has accomplished everything that the subtemporal or posterior fossa surgical approaches to the gasserian ganglion or its roots have, and without mortality, facial paralysis, and other complications common to major intracranial operation for tic douloureux.

* Medical Literature Abstracts, J.A.M.A., Feb. 20, 1960, pp. 168/868.

FACIAL MUSCLE TIC*

TO THE EDITOR:—*A 62-year-old man has a tic of the muscles of expression on the right side of his face. He has had it since 1941, and it has gradually become worse. The tic is most noticeable and severe when the patient suffers emotional stress. He has consulted a neurosurgeon who, because the patient has poor vision in the left eye, advised against alcohol injections to interrupt the nervous pathways of the tic. Interruption of the nerve tracts might interfere with the blink reflex in the right eye, which would diminish the total visual acuity. Since the center of his tic is in the musculature of expression around the zygomatic arch, or somewhat below, and spreads superiorly and inferiorly to involve the platysma on that side, would an alcohol injection of the maxillary branch only of the trigeminal nerve be of benefit to this patient? Past medical therapy has consisted of general sedation with barbiturates, tranquilizers, mephenesin, nicotinic acid, thiamine hydrochloride, vitamin B_{12}, and procaine hydrochloride infusion to the trigger point of the tic. None of these measures has been successful.*

George M. Wolverton, M.D., Clarksville, Ind.

ANSWER.—The problem of the patient who is suffering from a right facial tic is fraught with therapeutic difficulties. The right seventh nerve is affected, and alcohol injection is both technically difficult and contraindicated because of poor vision in the right eye. Since the patient has had neurosurgical consultation, it would be best not to attempt further treatment.

* Questions and Answers, J.A.M.A., Feb. 20, 1960, pp. 188/888.

SEVERE AND FATAL REACTIONS TO TRANQUILIZERS*

TO THE EDITOR:—*An oophorectomy (left side) and appendectomy were performed on a 19-year-old girl as an elective surgical procedure. She tolerated the operation well, responded satisfactorily to the anesthesia, and was sent from the recovery room in good condition, in a lucid state and able to talk. About five hours after receiving an intramuscular injection of 5 mg. of perphenazine she had a convulsive seizure, became unconscious, and developed anisocoria and hemiparalysis. Neither her blood pressure nor her pulse rate indicated a state of shock, and her urinary output was adequate. Results of a spinal tap showed no significant changes. About three hours after onset of these complications the patient developed marked pulmonary edema, went into shock, and died. The only significant autopsy findings were cerebral edema and marked pulmonary edema. It appears that the pulmonary edema was secondary to the cerebral edema, but the etiology of the latter was undetermined. It has been reported that tranquilizers have produced central nervous system symptoms. Is it possible that so small an amount of perphenazine could cause such a reaction?*

C. M. Karpas, M.D., Miami, Fla.

ANSWER.—According to Wang (*J. Pharmacol. & Exper. Therap.* 123:306 [Aug.] 1958), perphenazine is 17 to 50 times more potent an antiemetic than chlorpromazine hydrochloride and more wide-spread in its antiemetic action, since it will prevent the emesis induced by emetics other than apomorphine hydrochloride. The 5-mg. intramuscular dose of perphenazine which produced a fatal convulsion in this 19-year-old patient postoperatively might logically be compared to an intramuscular dose of 17 to 50 times 5 mg., or 85 to 250 mg., of chlorpromazine given intramuscularly; by this comparison, the 5-mg. dose is not small. The inquirer should consult Graff and associates (*J. A. M. A.* 169:834 [Feb. 21] 1959) for a report of a similar convulsions state that was induced by 8 mg. of perphenazine given orally twice a day. Colonic convulsions occurred after the third dose. Administration of the perphenazine was discontinued, and the patient was successfully treated with phenobarbital. Barrett (*J. A. M. A.* 166:1986 [April 19] 1958) reported convulsive seizures as a side-effect of chlorpromazine therapy, and numerous laboratory workers have shown that the three clinically useful alkaloids of rauwolfia and chlorpromazine will effectively lower the threshold for electroshock in rats and mice. Convulsions as a side-effect of therapy with the two substituted phenothiazines thus are to be expected, and these seizures should be treated vigorously with parenterally given phenobarbital, as in the treatment of status epilepticus. In the instance reported above, both the anisocoria and hemiparalysis were probably due to a series of convulsive seizures (or subclinical seizure activity) which produced cerebral edema. Freyhan (*Am. J. Psychiat.* 115:577 [Jan.] 1959) found perphenazine to be one of the most active of the phenothiazines in the production of paralysis agitans in schizophrenic patients.

* Questions and Answers, J.A.M.A., April 16, 1960, pp. 258/1872.

LOSS OF TASTE*

TO THE EDITOR:—*A 62-year-old woman has had a change in her sense of taste, so that all foods taste bitter, resulting in a poor intake of food. About June, 1959, her lips and the left half of the tongue felt numb (as from a novocaine injection) and she had a burning sensation and sore spots on the tongue, followed, since November, 1959, by the bitter taste. The burning sensation becomes more pronounced about 5 p. m. and thereafter. She has been examined by an oral surgeon; an ear, nose, and throat specialist; and an internist. She was considered physically and mentally fit for her age. Vitamin B_{12} therapy was prescribed but has done no good. She has lost 12 lb. (5.4 kg.) in body weight, which disturbs her. She has monthly attacks of pain down the left leg and red spots (vesicles and pustules) on the left buttock. Repeated administration of smallpox vaccinations and estrogenic hormones have not caused a change. Two years ago, she suffered complete loss of hearing in the left ear, due to death of the 8th nerve, and a concurrent nystagmus when she is in the dark. What can be done for this patient?*

M.D., Illinois.

ANSWER.—This patient's variety of symptoms, in addition to the subjective change in the sense of taste, suggest the need for a detailed neurological examination. If there are supportive objective findings involving the cranial nerves, the possibility of an organic brain syndrome must be considered. Demonstrable sensory changes in the peripheral distribution of the left 5th, 7th, and 9th cranial nerves, along with the 8th-nerve deafness mentioned, would point to a localized lesion in the region of the left cerebellopontine angle. Any specific treatment of disagreeable taste will thus depend on a more complete search for the origin of the symptom complex described.

* Questions and Answers, J.A.M.A., June 11, 1960, p. 742.

Book Reviews

A Guide to the Identification of the Genera of Bacteria, by V. B. D. Skerman, Williams and Wilkins Co., Baltimore, 217 pages, 1959, $5.50.

The Key to Genera of Bacteria has been compiled with the aim of placing in the hands of research workers, teachers, and students, a volume in which general directives for the identification of bacteria are supported by a complete list of the techniques needed for the purpose. The publication of the Key and Methods in the one book should encourage a more general application of common procedures for the description of bacteria. The main purpose of the digests is to draw attention in a more definite way to the deficiencies in descriptions within the various genera in the hope that steps may be taken to rectify them. A Guide to Study has been provided to ease the burden associated with the assimilation of knowledge over this various field of science.

Laboratory Manual of Biological Chemistry for Students of Dentistry, by Walter C. Hess, Ph.D. and Joseph C. Muhler, D.D.S., Ph.D., F.A.C.D., C. V. Mosby Co., St. Louis, 1959, 118 pages, $2.25.

The authors have written this laboratory manual so that it accompanies the text entitled "Textbook of Biochemistry for Students of Dentistry" edited by Joseph C. Muhler. It has been expressly written for dental students. The authors feel that dentistry in the future will make much more frequent use of laboratory aids especially in the fields of oral surgery, periodontia and pedodontia.

The experiments in this manual are designed for a thorough sixteen week course in biological chemistry with two laboratory periods a week. In preparing himself for excellence in the practice of his profession, the dental student can be helped by his knowledge and mastery of laboratory techniques.

Oral Pathology, An Introduction to General and Oral Pathology for Hygienists, by Donald A. Kerr, B.S., D.D.S., M.S., and Major M. Ash, Jr., D.D.S., M.S., Lea & Febiger, Philadelphia, 151 Illustrations on 110 figures, 1960, $6.00.

This textbook has been written especially for the dental hygienist and the student of dental hygiene and provides a simple and understandable account of the processes of disease. It also provides the essential background for the recognition and prevention of diseases within the scope of responsibility and practice of the dental hygienist. Drs. Kerr and Ash have established a proper balance between the principles of pathology and the coverage of specific diseases in order to bridge the gap between general pathology and applied oral pathology.

In eleven chapters the authors have approached the subject of oral pathology clearly and simply. They have successfully stressed that the hygienist performs various services in the presence of systemic and oral diseases. These services are of greater value because the hygienist understands the basic principles of pathology. The hygienist practices preventative periodontics, and understands the relationship between scaling procedures and endocarditis.

This book is a great aid to the hygienist in providing a foundation for her expanding role in assisting the dentist in the detection and prevention of oral diseases.

Oral Anatomy, by Harry Sicher, M.D., D.Sc., C. V. Mosby Co., St. Louis, ed. 3, 514 pages, 314 text illustrations including 25 in color, 1960, $13.50.

Dr. Sicher's new and enlarged edition of "Oral Anatomy" contains new information which has accumulated on the growth of the skull and the anatomy and function of the temporomandibular joint. The latter subject has been receiving increasing attention from the dental profession during the last ten years. As a result, Dr. Sicher has almost entirely rewritten the chapter on the temporomandibular joint.

This book tries to bridge the gap between theory and practice and to prove that anatomic understanding does not only facilitate clinical work but that it also allows for the substitution of a rigid clinical technique by an adaptable and therefore potentially progressive action. In many chapters the boundaries of pure anatomy have been transgressed where for instance surgical technique is touched upon to show that it can be developed as a logical consequence of anatomic study.

The new anatomic nomenclature approved by the International Nomenclature Committee in Paris in 1955 has been used throughout this book.

Dr. Sicher's book is a must for all dental students and a handy reference for the dental practitioner. This third edition thoroughly covers the subject of oral anatomy.

Modern Practice In Crown and Bridge Prosthodontics, by John F. Johnson, D.D.S., Ralph W. Phillips, A.B., M.S., and Roland W. Dykema, D.D.S., W. B. Saunders Co., Philadelphia, 420 pages, illustrated, 1960, $12.00.

This text has been planned with the particular needs of the undergraduate student in mind. It presents basic knowledge and accepted techniques in a manner which will enable the student or practitioner to assimilate and apply them clinically. The authors have been intentionally conservative in this clinical approach so that the student will follow a plan designed to help him avoid difficulties. The clinician will broaden the application of many principles with success at the same time observing the fundamentals.

The authors deal with Diagnosis and Treatment Planning before going into a discussion of cutting instruments, veneer crowns, the pinledge retainer, tube impressions, casting and the direct and indirect techniques. The pontic, pontic form, soldering, glazing and cementing the bridge are also discussed in detail. Related subjects that are included in the text are: orthodontic positioning of abutment teeth, clasp retained removable prosthesis, bridge failures, occlusion factors, and case histories.

This fine text is an excellent addition to the increasing dental library on crown and bridge prosthodontics.

The Year Book of Dentistry (1959-1960) by Stanley D. Tylman, D.D.S., M.S., Donald A. Keys, D.D.S., John W. Knutson, D.D.S., Dr. P.H., Harold J. Noyes, D.D.S., M.D., Hamilton B. G. Robinson, D.D.S., and Carl W. Waldron, M.D., D.D.S., Yeark Book Publishers, Chicago, 479 pages, 264 illustrations, 1960, $7.50.

Each year the Yearbook Publishers Inc. present a handy text which covers the current world dental journal literature which is organized, classified and illustrated by subjects. 289 current journal articles are represented in this new volume. Each article has been chosen by the authors because it provides the practitioner with helpful guidance in his daily practice.

The Year Book of Dentistry is always a worthwhile addition to any practitioner's library.

Partial Dentures, by Merrill G. Swenson, D.D.S., and Louis G. Terkla, D.M.D., ed. 2, C. V. Mosby Co., St. Louis, 389 pages, wth 403 illustrations, six in color, 1959, $10.50.

Partial Dentures is a companion piece to *Complete Dentures*. The practitioner who does full denture work must also do a great deal of partial denture construction in conjunction with fixed bridge work. A practical approach to these subjects is imperative. Both of these textbooks can serve as a helpful guide to the busy practitioner.

The chapter on Diagnosis, Prognosis and Treatment Planning has been widened in scope; the chapter on Planning, Designing and Surveying has been reorganized and increased in size, especially on Surveying. The Chapter on Partial Denture Clasps has been supplemented with new material and a new chapter on Miscellaneous Factors Related to Partial Dentures has been added.

The second part of the book is devoted to the actual construction of partial dentures, an entirely new sequence of illustrations has been used and a new chapter on Cleft Palate and Partial Dentures has been included. The bibliography covers the last 18 years of publications on partial denture construction.

Complete Dentures, by Merrill G. Swenson, D.D.S., in collaboration with Charles J. Stout, B.A., B.S., D.M.D., ed. 4, C. V. Mosby Co., St. Louis, 682 pages, 856 illustrations including 10 in color, 1959, $13.50.

The ever-increasing life span places more and more responsibility upon the dental profession not only to create good restorations but also to understand the related factors of the patients' general health, nutrition, mental attitudes, etc. Dr. Swenson's fourth edition has been prepared to introduce new improvements in technique and materials but to also simplify and clarify methods.

New changes since the previous edition include the abandonment of modeling compound in favor of quick setting alginate for preliminary impressions, a new method of selecting anterior teeth, a simplified tracing device for centric jaw relation, the use of chrome alloy for maxillary metal denture plates, and additional information on vertical dimension.

Many changes in nomenclature have been incorporated in accordance with the excellent work done by the Nomenclature Committee of the American Academy of Denture Prosthetics. The bibliography has been brought up to date.

The text is well written and illustrated. The pictures are large and clear and are accompanied by descriptive legends. This book is a welcome addition to any practitioner's library.

Atlas of Clinical Pathology of the Oral Mucous Membrane, by Balint J. Orban, M.D., D.D.S., and Frank M. Wentz, D.D.S., M.S., Ph.D. and contributors, ed. 2, C. V. Mosby Co., St. Louis, 148 pages, 87 colored illustrations, 147 black and white illustrations, 1960, $14.50.

The objective of this fine atlas is to give the practitioner and student a diagnostic tool to use when confronted with an oral lesion. The material has been classified primarily according to the etiology and pathologic tissue changes. Every disease is illustrated by a colored clinical picture. This picture is followed by the histopathologic description of the lesion. The text is concise and consistent with atlas style and all

unnecessary detail has been eliminated. Only the characteristic features are discussed.

The atlas is intended to be used only as a tool in diagnosis and is to be supplemented by more detailed texts on dental medicine. The authors are to be congratulated on their systematic, clear and concise presentation of the essential facts. This book is an asset for every dentist and should be an excellent and handy reference for all interested in oral pathology.

Symposium on Practical Periodontal Therapy, Irving Glickman, D.M.D., Consulting Editor, Dental Clinics of North America, W. B. Saunders Co., Philadelphia, 226 pages, illustrated, March 1960.

With the assistance of twenty contributors, Dr. Glickman has presented this practical handbook dealing with the treatment of periodontal disease. It consists of periodontal treatment techniques proven by experienced clinicians throughout the world. The editor has prepared this book according to a plan based on what he calls "total periodontal treatment". He has deemphasized the importance of just the periodontal pocket and includes "the establishment of an optimum functional relationship for the entire dentition by occlusal adjustment and restorative or orthodontic procedures, the control of systemic conditions pertinent to the periodontal problem, and the maintenance of a local environment essential for continued periodontal health after it has been attained".

To cope with problems of advanced periodontal disease, considerable attention has been devoted in the text to various surgical methods for treating periodontal pockets. Osteoplasty and osteoectomy are also discussed. Of considerable interest to the practitioner is a discussion of the pin-ledge casting technique in relation to periodontal splinting.

The editor and contributors have presented a fine assortment of clinics relating to periodontal treatment. Periodontists and general practitioners can derive a great deal of benefit from this practical and useful book.

High Speed And Ultra Speed In Dentistry, by Harold C. Kilpatrick, D.D.S., with contributors, W. B. Saunders Co., Philadelphia, 289 pages, 429 illustrations on 230 figures, 1959, $8.50.

During the last decade there have been many advances in materials, equipment and techniques that have become available to the practitioner. The increase in the speed of rotary cutting instruments is one of the outstanding new techniques. The purpose of this text is to assist the dentist who is interested in acquiring high speed equipment to make an intelligent choice according to his particular needs. The book also helps those who are already using such equipment to achieve the greatest possible benefit from it.

The author has presented objective evaluations of the available types of equipment, with comparisons of their various characteristics. There is also information on auxiliary equipment and maintenance in addition to a discussion of the subject of safety. Advice on practice training for high speed and the selection of cutting tools is also outlined. Detailed descriptions of the use of high speed in making preparations in restorative dentistry, in oral surgery and in numerous other applications is thoroughly covered.

The book is well illustrated and the text is printed in large type. The book is an important adjunct to those practitioners who use high speed in their daily practices.

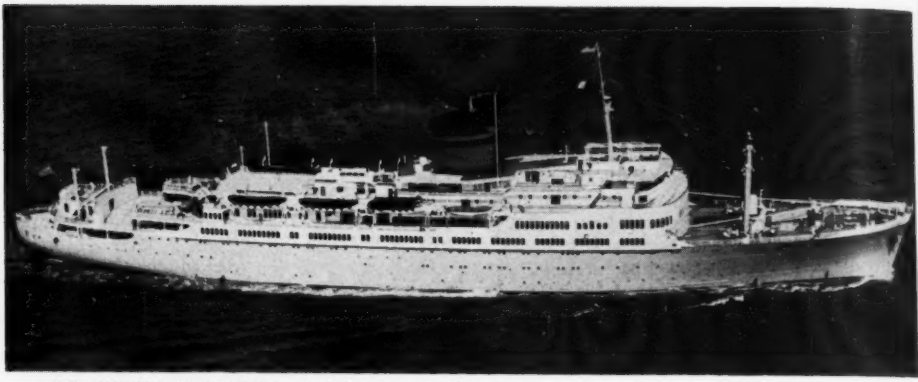
A Manuel Of Oral Embryology And Microscopic Anatomy, by Dorothy Permar, B.S., M.S. ed. 2, Lea & Febiger, Philadelphia, 120 pages, 59 illustrations, 1959.

This text, especially written for students of dental hygiene, presents basic information on the microscopic anatomy of the teeth and other oral tissues, and on the relationship of the teeth to one another and their surrounding tissues. The book develops a sound basis for exercising judgement in performing an oral prophylaxis and gives students a background for understanding some of the abnormalties seen frequently in the practice of dental hygiene.

For the second edition, nine chapters have been rewritten. The chapter on general histology has been expanded to give students a broader view of tissues in general. New illustrations, including clinical photographs and photomicrographs have been added.

Academy Proceedings

AMERICAN ACADEMY OF DENTAL MEDICINE
1961 — CRUISE — CONVENTION



S.S. OCEAN MONARCH, 13,654 tons, 516 feet long, 73 feet wide, 18 knots cruising speed, completely air-conditioned, outside swimming pool, cruise passenger capacity: 428.

Your hosts, the New York Section, cordially invite you to attend the 1961 National Convention of the American Academy of Dental Medicine which is to be held aboard the luxury liner S.S. Ocean Monarch from Friday, May 26th to Saturday, June 3rd.

An unusual, stimulating, scientific program is being planned, coupled with 8 days of good food, fun, and fellowship. The ship is completely air conditioned and there are 157 outside rooms with private facilities. The rates range from $200.00 per person, all inclusive.

Make your reservations early by sending $100.00 to Travel Guide Agency, Att: Mr. Eugene Fisher, 416 North Charles Street, Baltimore, Maryland.

The registration fee for the scientific sessions is $10.00. Kindly make your check payable to A.A.D.M. — Cruise Convention, and mail to Dr. Rudy Palermo, 106 Central Ave., Brooklyn, N. Y.

We look forward to greeting you at the pier.

DR. HOWARD L. WARD, *Chairman*
DR. HENRY I. GREENE, *Co-Chairman*

AWARDS COMMITTEE

In an era when good will and the sharing of our knowledge is most imperative, the American Academy of Dental Medicine continues to maintain the lead in the field of communicating valuable ideas with Medical and Dental Schools throughout the world.

As in previous years the deans of these schools have accepted the offer of our Journal to their library with sincere appreciation. They have recognized its great value to their student body and faculty for its fine quality and original source material in the field of oral medicine. Many of them claim that our Journal has been a real inspiration to their student body and our award of a certificate is much sought after. The Academy can be justly proud of this major source of activity.

Three hundred and sixty-nine letters were mailed to schools throughout the world in February 1960, with a request to the dean and the leading student in Oral Medicine be awarded a five year subscription to the Journal of Dental Medicine and a Certificate of Merit. To this date (May, 1960) we have had one hundred and twenty-seven awards and others will continue to come in during the summer and fall because of different examination dates and graduation times of the various universities.

Typical of the responses is the following:

Duke University Medical Center —"On behalf of Duke University Medical Center, and the students, as well as personally, I wish to thank you and the American Academy of Dental Medicine for continuing the Award in Dental Medicine."

The American Academy of Dental Medicine has built a tremendous reservoir of good will throughout the world. This work has been a most gratifying experience for me.

EARL STONE, *Chairman*

NEW MEMBERS ELECTED AT ANNUAL BUSINESS MEETING MAY 29, 1960

Allen, Albert J.
Braintree, Mass.

Blechman, Harry
New York, N. Y.

Block, Marvin J.
Rochester, N. Y.

Blumenthal, Saul M.
Baltimore, Md.

Cherney, Arthur B.
Milwaukee, Wisc.

Feldman, Arnold S.
Baltimore, Md.

Ferebee, Claude
White Plains, N. Y.

Ferraro, James V. Jr.
Bronx, N. Y.

Floyd, Horace
Detroit, Michigan

Gelb, Sanford B.
Passaic, N. J.

Goldstein, Allen
Royal Oak, Mich.

Helminen-Pakkala, Eva
Tempere, Finland

Jaffe, Victor N.
Washington, D. C.

Jerome, Burton M.
White Plains, N. Y.

Krause, Jerome D.
Dearborn, Michigan

Lazenby, Glenn A. Jr.
Statesville, N. C.

Lebow, Irwin N.
Bloomington, Ill.

Leinfelder, M. J.
Milwaukee, Wisc.

Marklin, Robert G.
St. Louis, Mo.

Maxen, Harold A.
Detroit, Mich.

McGrath, Robert J.
Maywood, N. J.

Pearson, Charles F.
Nashville, Tenn.

Pfeifer, John S.
Green Bay, Wisc.

Pincus, Charles L.
Beverly Hills, Calif.

Risk, Donald Lee
San Antonio, Texas

Sapp, Baxter B. Jr.
Durham, N. C.

Seltman, M. Alfred
Elmhurst, N. Y.

Shaffer, Harold A.
Philadelphia, Pa.

Shamy, Frank E.
Montreal, Canada

Spasser, Herbert F.
New York, N. Y.

Uchin, Robert A.
Philadelphia, Pa.

Williams, Lloyd W.
Schenectady, N. Y.

MICHIGAN SECTION

The Michigan Section of the American Academy of Dental Medicine held four meetings in 1959, the first of which has been reported. A resume of the others follows:

Coincident with the Michigan State Dental Association Annual Meeting held in April at Grand Rapids, our section held its second meeting. We were privileged to hear

Dr. Erwin M. Schaffer of the University of Minnesota School of Dentistry who presented a most interesting treatise on the use of cartilage implants in periodontal pockets.

Our President, Dr. Charles Conat and Mrs. Conat were hosts to the Michigan Section on Saturday, August 22, 1959. Their lakeside home provided an excellent setting for our meeting. A Ladies Auxiliary of the Michigan Section was organized, and action was initiated to promote establishment of a Women's Auxiliary at the National level. The pleasant outing furthered friendships admirably and served as an excellent get acquainted occasion.

On November 17th our section hosted our learned Dr. A. Alfred Nelson of Detroit. Dr. Nelson, an outstanding teacher in the field of prosthodontia discoursed on "Temporomandibular joint disturbances—as seen through the eyes of the prosthodontist." A meeting of the nominating committee followed.

The annual election of officers was held on Tuesday, Jan. 26. The following members were elected to their respective offices by unanimous vote:

President	Dr. O. B. Aubin
President-Elect	Dr. Meyer Green
Vice-President	Dr. David Collon
Secretary	Dr. Herman Lifton
Treasurer	Dr. Joseph Barkley
National Delegate	Dr. Edward Freimuth
Alternate Delegate	Dr. Marie Salutsky

The members of the Women's Auxiliary were our dinner guests. Following the election of officers, our section was privileged to hear an excellent presentation on "The Dentist and the Law" by Dr. John Shackelford and a legal representative of the Medical Protective Association.

EDWARD FREIMUTH, *National Delegate*

NEW JERSEY SECTION

A year ago, the New Jersey Section had the honor and the privilege of being host for the Thirteenth Annual Convention. The Section wishes to thank the officers and the general membership for the opportunity to serve and looks forward to the next call.

Regularly scheduled scientific sessions were held during the past year. Summaries of the first two have been published in the Journal. Our last scientific session was presented by the Department of Periodontics and Oral Medicine, Fairleigh Dickinson University School of Dentistry, under the able direction of Abram I. Chasens; he, Marvin Tuckman, Sherwood O'Kuhn and Lester Older presented a Seminar on Periodontics.

Elected to Office were the following:

President	Dr. Sam Ament
President-Elect	Dr. James B. Dickinson
Secretary-Treasurer	Dr. Ralph Kanders
Editor	Dr. Abraham S. Riskin
National Delegate	Dr. Reuben Feltman
Trustees	Dr. Edward Bressman, Dr. Walter Soltanoff, Dr. Alvin Hirshberg

A committee is preparing a list of duties of the Officers and the Board of Trustees.

It will be printed and be given to the Officers upon election to aid them in the proper fulfillment of their duties.

The section has obtained as clinician for its October 4th meeting, Dr. Daniel Brower. Dr. Brower is Associate Professor of Clinical Psychology at Montclair College and is on the staffs of many hospitals and psychological clinics. He has chosen as his topic, "What Can Clinical Psychology Offer to Clinical Dentistry?" The section invites you to attend this and our other meetings, notices of which appear in our section reports submitted to the Journal.

REUBEN FETMAN, *Delegate*

MASSACHUSETTS SECTION

The Annual Meeting of the Massachusetts Section of the American Academy of Dental Medicine concluded a very successful year with an all-day meeting held on Sunday, April 3, 1960, at Tufts University School of Dental Medicine.

The Massachusetts Section were the guests of the L. A. Cohn Study Club, whose members are interested in the study of Occluso-Rehabilitation.

Dr. Victor Lucia and his associate, Dr. Salenzia, both of New York City, outstanding authorities in the field of Occluso-Rehabilitation, covered the following phases of the subject: Occlusion, Articulation, Pantographic Writing and Mounting, Temporomandibular Joint, and A New Concept of Hinge Axis. The scientific session was followed by a question period. All phases were amply demonstrated on a patient.

At the business meeting, the following were elected as the new officers for the year 1960-1961:

President	Dr. Richard C. Harriott
President-Elect	Dr. Maurice F. Grossman
Vice-President	Dr. Robert I. Diamond
Treasurer	Dr. Charles V. Caldarone
Secretary	Dr. Edward R. Loftus

ROBERT I. DIAMOND, *Vice-President*

MONTREAL SECTION

The Montreal Section is pleased to report that they have just completed a very successful year.

The first meeting of the 1959-60 session was held on September 26, 1959, at the Alpine Inn, Ste. Marguerite in the beautiful Laurentian Mountains. The speaker was Dr. Clark Fraser, Professor of Genetics, McGill University. His topic was "Genetics in General and its Relation to Dentistry." A pleasant week-end was had in the presence of our women folk.

The second meeting took place on November 30, 1959, at the Mount Stephen Club. The lecturer was Dr. Preston Robb, Professor of Neurology, McGill University. He spoke on "A Neurologist Looks Into the Mouth."

The third meeting was held on Sunday, March 27, 1960, at the Queen Elizabeth Hotel. The Clinician of the day was none other than Dr. E. V. Zegarelli of Columbia University. His first topic was "Keratotic Diseases of the Mouth." Later he discussed

"Allergic Lesions of the Mouth." Members of all dental societies in Montreal were guests of the Section.

The concluding meeting of the Session was held on April 20, 1960. This was in the form of a dinner with our ladies present. It was held at the Mount Stephen Club. Following dinner, reports were read and elections ensued. We were then treated to a nice feature film.

The following were elected for 1960-61:

President	Dr. P. J. Gitnick
Vice President	Dr. H. M. Robichaud
Secretary-Treasurer	Dr. R. F. Harvey
Executive Committee	Drs. R. Wiener, G. Plamondon, A. D. Richardson

LOUIS J. ROSEN, *Delegate*

NEW YORK SECTION

The Section had another active year, holding three very interesting and well attended meetings. In addition, our membership participated in many areas on the National level.

Our October meeting was on the subject of "Simple Orthodontic Procedures for the General Practitioner." This material was succinctly presented and well illustrated by Lewis Schwartz.

The second Samuel Charles Miller Memorial Lecture, jointly sponsored with the Department of Periodontia and Oral Medicine, New York University Collgee of Dentistry was held in February. This outstanding meeting was attended by such national figures as President George Stewart and Past Presidents, Sidney Sorrin, J. Lewis Blass, William Greenhut and Harold Gelhaar. The essayist was Lewis Fox, who presented an outstanding paper on Periodontal Therapy.

Our concluding meeting of the year was an all day affair on Sunday, April 24. The meeting was held at Goldman's Hotel, in Pleasantdale, N. J., with the thought of having a day with the family as well as a scientific program. The essayist was Nathan A. Shore, who gave a fine discourse on his philosophy of "Occlusal Equilibration and Temporo-Mandibular Joint Dysfunction."

The new officers elected at this meeting were:

President	Henry I. Greene	Asst. Editor	Alan Simonson
Pres. Elect	Angelo Cacciatore	Delegate	Howard Ward
Secretary	Seymour Koteen	Trustees	Celia Dickman
Treasurer	Leonard Nevins		David Disick
Editor	Arthur Nachbar		Frederick Romberg

The Academy's mid-winter meeting was once again sponsored by the New York Section, under the able guidance of Chairman, Andrew Cannastracci and Co-chairman, Sanford Kirsch. The coming year will see another fine meeting under the guidance of Chairman, Stephen Nachbar and Co-chairman, Howard Ward.

The New York Section has also been honored by being chosen for the annual meeting of 1961. Plans have been formulated for a cruise to Nassau by Co-chairmen, Howard Ward and Henry Greene.

SANFORD KIRSCH, *Delegate*

ST. LOUIS SECTION

The St. Louis Section of the American Academy of Dental Medicine had five meetings the past year, at which time the following subjects were discussed:

September 1959	John Bauer, M.D. "Blood Dyscrasias"
November 1959	George Stewart, D.D.S.
January 1960	Louis T. Byars, M.D. "Plastic Surgery and The Dental Surgeon"
March 1960	Seymour Monat, M.D. "Obstetrics and Gynecology Affecting Oral Structures"
April 1960	James B. Costen, M.D. "The Temporomandibular Joint"

At our last meeting the following officers were elected for 1960-1961:

President	Gunter Schmidt, D.D.S.
Secretary-Treasurer	Sherman J. LeMaster, D.D.S.

SHERMAN J. LEMASTER, *Delegate*

Announcements

POSTGRADUATE TRAINING IN PERIODONTIA AND ORAL MEDICINE NEW YORK UNIVERSITY COLLEGE OF DENTISTRY

The following postgraduate courses in Periodontia and Oral Medicine will be offered at the New York University College of Dentistry and will be given by Dr. Sidney Sorrin and associates:

No. 124.02. REFRESHER COURSE IN PERIODONTIA AND ORAL MEDICINE

Ten sessions, Wednesday, 4:00 to 6:00 P.M. March 1, 1961 to May 10, 1961.
Tutition and books. $156.00. Instruments approximately $55.00.

Theoretical and practical application of periodontal diagnosis and techniques to general dentistry. Four lecture and six clinical demonstration sessions. Equilibration of occlusion is performed by the student on casts. Patient demonstrations include equilibration of occlusion, conservative and radical therapy, home care, etc.

No. 123.02. PERIODONTIA AND ORAL MEDICINE IN THE SPANISH LANGUAGE

Four weeks, Monday through Friday, 9:00 A.M. to 4:00 P.M.
April 10 to May 5, 1961 inclusive. Tuition including books and instruments approximately $385.00.

Theoretical and practical application of Periodontia and Oral Medicine is fully explained and demonstrated. Equilibration of occlusion is performed by the student on casts. Lectures and clinical demonstrations of diagnosis and treatment planning, conservative and radical techniques, equilibration of occlusion, home care, etc. The entire course is conducted in the Spanish language.

COMPREHENSIVE PREPARATION IN PERIODONTIA AND ORAL MEDICINE

No. 120.11 and 121.11. Two academic years, full time, September 19, 1960 to May 25, 1962.
Tuition $2,020.00 (two years). Instruments and books approximately $231.00.

No. 120.21 & 121.21 Four academic years, half time. September 19, 1960, to May 1964. (Two and one half days weekly.)
Tuition $2,020.00 (four years). Instruments and books approximately $231.00.

These courses are designed for comprehensive preparation in Periodontia and Oral Medicine and are of particular significance for certification towards specialization. All didactic and clinical phases are covered with the objective of developing expert proficiency.

No. 222. GRADUATE COURSE IN PERIODONTIA AND ORAL MEDICINE.

Two academic years, full or half time, beginning Sept. 19, 1960. Tuition $2,020.00. (two years). Instruments and books approximately $275.00.

This program leads to the degree of Master of Science (in Dentistry). The objectives are to teach superior proficiency in Periodontia and Oral Medicine based on adequate background in the basic sciences.

For further information, write to the Secretary, Postgraduate Studies, New York University College of Dentistry, 421 First Ave., New York, N. Y.

FIRST DISTRICT DENTAL SOCIETY, NEW YORK

The First District Dental Society Postgraduate Department presents the following courses:

An Introduction to Orthodontics

October 3, 4, 5, 6, 7, 8, 1960—Dr. Saul R. Kaye, Dr. James Jay, Dr. Jerome H. Green, Dr. Arnold Geiger.

Preparation for State Board Examinations Covering Practical Aspects of Prosthetics, Crown and Bridge and Operative

October 10, 11, 12, 13, 14, 15, 1960—Dr. David Shelby, Dr. Samuel Friedman, Dr. Wm. H. Silverstein.

Periodontics

October 19, 20, 21, 1960—Dr. Abraham Berliner.

All courses will be held at the Hotel Statler Hilton, New York City.

For further information and applications, please write to the Postgraduate Department, First District Dental Society, Hotel Statler Hilton, New York City 1.

GREATER NEW YORK DENTAL MEETING

The 36th Annual Greater New York Dental Meeting will be held at the Hotel Statler Hilton, New York City, on December 5th through the 9th, 1960.

The reputation of this Meeting has become so widespread that practitioners from all over the world are attracted to it.

There will be Research Seminars and Exhibits given by men from Dental Colleges and Research Institutions of the Government covering many fields of Dentistry.

In addition to the Registered Clinics, which have become a tradition at the Meeting, the Special Clinics by Metropolitan Talent, received so well last year, will be repeated. Other educational features will include projected clinics, visual education, clinical demonstrations and lectures.

The Luncheon and Learning gathering, always held on Wednesday, has become a recognized means of sharing ideas with authorities. A separate luncheon for the ladies presents the latest in fashions.

The exhibitors, representing over two hundred companies from all parts of the country, display the finest and most recent material and equipment.

Further information concerning the Meeting is available from Mrs. Mabel Purdy, Executive Secretary of the Meeting, Room 106A, Hotel Statler Hilton, New York 1, New York.

FIRST DISTRICT DENTAL SOCIETY, NEW YORK

Highlighting the Centennial program of the First District Dental Society, Dr. Raymond J. Nagle, Dean of New York University College of Dentistry and President of the American Association of Dental Schools, will receive the society's annual Henry Spenadel award "in recognition of his contributions to the welfare of humanity in the field of dentistry" at the opening stated meeting of its fall and winter series, to be held at Hotel Statler Hilton, New York, October 3, it has been announced by Drs. Theodore C. Agins and Max E. Michaelson, co-chairmen of the Centennial Committee.

The award consists of a handsome framed scroll, embossed and illuminated on parchment paper, and a gold medal. It was established in 1950 by the society to encourage and pay tribute to individuals and organizations making significant contributions to dentistry and the public it serves, and to honor the late Dr. Henry Spenadel, a member, for his lifelong devotion to professional dental education.

Plans for the gala Centennial banquet to be held in the new grand ballroom of Hotel Pierre Friday evening, November 11, have been revealed by Drs. Edward N. Carney, Jr. and Jerome H. Green, co-chairmen of the event. Approximately a thousand members and guests of the society are expected to attend. A number of interesting entertainment features are projected, and a nationally prominent speaker to be announced later will deliver the principal address.

Ticket orders for the occasion, at fifteen dollars per cover, may be sent to Drs. Carney and Green at First District Dental Society headquarters, Hotel Statler Hilton, New York 1, N. Y. Early reservations are advised, in view of limitations of facilities and the capacity attendance expected.

Leading the list of alumni and specialty groups making advance reservations in quantity for the banquet, the Tufts Dental Alumni Club of New York early in May ordered fifty seats for the affair through its president, Dr. Joseph A. Salviolo. The club is inviting the new dental Dean of Tufts and his wife, Dr. and Mrs. John W. Hein, to be its guests on the occasion.

AMERICAN ACADEMY OF PERIODONTOLOGY

The American Academy of Periodontology will hold its 46th annual meeting at the Miramar Hotel, Santa Monica, California, on October 13th, 14th and 15th, 1960.

The theme of the scientific program of this meeting is "The role of the tooth in periodontal health and disease."

This meeting is designed to be most helpful not only to periodontists, but also to the general practioner in dentistry. Any member of the American Dental Assoication, or a foreign dental association, may attend on the payment of a modest registration fee.

HOWARD A. HARTMAN, D.D.S.
Chairman of Publicity

TEMPLE UNIVERSITY POSTGRADUATE DIVISION CLINICAL ENDODONTICS

An intensive participation course in Clinical Endodontics will be presented at Temple University October 31, November 1, 2, 3, 4, 5, 1960. The course is under the direction of Dr. Leonard Parris, assisted by Drs. Harold Rappaport and Robert Uchin.

The course will be given on six consecutive days, and will consist of lectures, supplemented by visual aides. Closed circuit television will be used during the clinical demonstrations. The postgraduate student will utilize diagnostic procedures, initiate treatment, and carry through to completion endodontic therapy on clinic patients supplied by the university. Single and multi-rooted teeth will be treated. Enrollment is limited to ten. Tuition is $175.00.

This course will fulfill the prerequisite requirement for the postgraduate course "Surgical Endodontics" to be presented March, 1961.

For further information and applicaiton write to: Dr. Louis Herman, Director, Postgraduate Studies, Temple University School of Dentistry, 3223 N. Broad Street, Philadelphia 40, Pa.

NEW YORK INSTITUTE OF CLINICAL ORAL PATHOLOGY, INC.

The New York Institute of Clinical Oral Pathology announces the Ninth Herman L. Reiss Memorial Lecture to be held at the New York Academy of Medicine Building, 2 East 103rd Street, on Monday, October 31, 1960, at 8:30 P.M.

The essayist will be Harry Sicher, M.D., D.Sc., Chairman, Departments of Anatomy and Histology, Loyola University, School of Dentistry, Chicago College of Dental Surgery, Chicago, Illinois, who will lecture on the subject of "ANATOMY AND ORAL PATHOLOGY."

This will be an open meeting to which members of the dental, medical and allied professions are cordially invited.

THEODORE BLUM, *Secretary*

THE WILLIAM J. GIES FOUNDATION FOR THE ADVANCEMENT OF DENTISTRY, INC.

The Board of Directors of the William J. Gies Foundation for the Advancement of Dentistry announce that Dr. Ascher L. Jacobs' editorial, "Dentistry and Apathy" which appeared in the Illinois Dental Journal, April 1959, will receive the 1959 William J. Gies Editorial Award. The editorial is attached.

In informing Dr. Jacobs of the Foundation's choice, Dr. Bissell B. Palmer, president, wrote:

"Dr. Gies devoted many years to the advancement of Dentistry. He steadfastly maintained that the progress of the profession would be achieved by inspired leadership. The most effective leadership is probably that appearing in the editorial columns of the dental press. The Board of Directors of the Foundation believe that the quality of leadership expressed by your excellent editorial exhorting dentists to participate in the affairs of the organizations of their profession is highly commendable."

The prize of two hundred dollars and a plaque will be presented to Dr. Jacobs at the forthcoming meeting of the American Association of Dental Editors to be held in Los Angeles on October 15.

The following two editorials were given honorable mention:

Our First Responsibility, by Dr. Bruce L. Douglas, Bulletin of Tenth District Dental Society of the State of New York, November 1959.

Leadership, by Dr. Edward J. Cooksey, Texas Dental Journal, November 1959.

The William J. Gies Editorial Award is an annual event and dentists are invited to submit editorials for the 1960 competition to the Foundation office at 221 Fourth Avenue, New York 3, New York, by March 1, 1961. All editorials should be limited to 750 words and published in non-proprietary dental journals in the United States and Canada. Whenever possible participants are requested to send 3 copies of each editorial, identified with name of writer, publication name, and date.

1960 MID-CONTINENT DENTAL CONGRESS

Sponsored by the St. Louis Dental Society

November 27-30, 1960

Chase Hotel St. Louis, Missouri

"1960—A NEW DECADE FOR LEARNING"

Sunday, November 27—*Special Four Hour Course*

"Practice Administration—Improve Dentistry Faster Without Increased Cost to the Patient"
John L. Woehler, D.D.S., Sierra Madre, Calif.

Monday, November 28

"Oral Rehabilitation"
Ted Gordon, D.D.S., Chicago, Illinois

"Clinical Features and Recognition of Common Lesions of the Oral Mucosa"
Lester W. Burkett, D.D.S., M.D., Philadelphia, Pa.

"New Concepts in Endodontics"
George C. Stewart, D.D.S., Philadelphia, Pa.

Tuesday, November 29

"Normal Functional Occlusion"
Angelo D'Amico, D.D.S., Stockton, Calif.

"Making Dentistry for Children Pleasurable and Profitable"
Clinton C. Emmerson, D.D.S., Los Angeles, Calif.

"What Place has Periodontics in General Practice of Dentistry?"
Frank E. Beube, D.D.S., New York, N. Y.

"Evaluation of Newer Dental Materials and Factors Affecting Their Clinical Success"
Ralph W. Phillips, Indianapolis, Indiana

"Techniques for Positive Healing After Surgery"
John C. Versnel, D.D.S., St. Louis, Mo.

Wednesday, November 30

"Complete Dentures"
Vincent R. Trapozzano, D.D.S., St. Petersburgh, Florida

For additional information, write the St. Louis Dental Society, 8013 Maryland Avenue, St. Louis, 5, Missouri.

AMERICAN BOARD OF HYPNOSIS IN DENTISTRY

The American Board of Hypnosis in Dentistry will meet October 5th, 1960, at the Willard Hotel, Washington, D. C. Applicants for certification who wish to appear for examination at that time should please communicate with the secretary, Dr. S. Irwin Shaw, 18201 Cherrylawn Avenue, Detroit 21, Michigan, prior to September 1st, 1960.

THE AMERICAN INSTITUTE OF ORAL BIOLOGY

The 17th Annual Meeting of The American Institute of Oral Biology will be held in Palm Springs, California, October 8-12, 1960, preceding the meeting of the American Dental Association in Los Angeles. The faculty will comprise the following outstanding speakers:

Benjamin H. Ershoff, Ph.D., Director of the Western Biological Laboratories in Culver City, California, will present interesting material regarding conditioning factors in nutritional disease, and unidentified nutritional factors and resistance to stress.

John Field, Ph.D., Associate Dean of the School of Medicine, University of California at Los Angeles, will discuss the development of biomedical sciences with especial regard to concepts and theories.

Edgar S. Gordon, M.D., Professor of Medicine, University of Wisconsin. His timely subjects on fat, carbohydrate, and protein metabolism, metabolism of exercise, and the vascular disease of diabetes, will correlate well with the other lectures.

Wilton M. Krogman, Ph.D.; his topics are: Genetics and the dentist; The Philadelphia standards of facial growth; and the role of roentgenographic cephalometry in facio-dental changes in later life. He is the director of the Philadelphia Center for Research in Child Growth.

Balint Orban, M.D., D.D.S., will describe tissue structure and the function of the periodontium; experimental occlusal trauma (in monkeys) and its biologic and practical significance; wound healing after various methods of periodontal therapy and roentgenographic interpretation of the alveolar crest and structure of the alveolar bone.

C. M. Pomerat, M.D., Professor of Cytology at the University of Texas—Medical Branch, will enlarge on the various aspects of his general field of cytology and its importance in dentistry.

Hamilton B. G. Robinson, D.D.S., M.S., Dean of the School of Dentistry, University of Kansas City, will discuss the white lesions of the oral cavity, the diagnosis of cysts of the jaws, and the healing process with special relationships to the oral cavity.

Milton J. Schiffrin, Ph.D., Clinical Assistant Professor in Anesthesiology at the University of Illinois and Associate Director of Clinical Research at Hoffman-La Roche, Inc., will present the subjects of new drugs and their development; placebo controlled clinical studies, and ethics; and psychotherapeutic agents (tranquilizers and sedatives); and the management of pain.

For further information, write to The American Institute of Oral Biology, 2240 Channing Way, Berkeley 4, California.

TUFTS UNIVERSITY SCHOOL OF DENTAL MEDICINE

DPG 605—"A Special Participation Course in Periodontology"

Monday through Friday for one week from October 31, 1960, through November 4, 1960. Tuition $175.00—Class Limited. Doctor Irving Glickman and staff:

For information write: Director of Division of Graduate and Postgraduate Studies, Tufts University School of Dental Medicine, 136 Harrison Avenue, Boston 11, Massachusetts.

BERNARD GOTTLIEB PRIZE SPONSORED BY THE NORTHEASTERN SOCIETY OF PERIODONTISTS

Purpose:

The prize will be awarded in the opinion of the judges to the most outstanding, original investigation submitted. Investigation will deal with the field of Periodontics in its broadest aspects.

Prize:

The prize will consist of a $500.00 cash award and a suitable bronze plaque.

Award:

The prize will be awarded annually. The judges, however, may decide not to award the prize at any time that a suitable investigation is not available. The award will be made at the annual spring meeting.

Contestants:

The contest is open to all investigators in the biologic and health sciences.

Papers must be submitted in triplicate to the Secretary, Northeastern Society of Periodontists, prior to January 1 of the year of award. A title sheet with the authors name is to be submitted separately and will be kept by the secretary.

Award Procedure:

The secretary will forward the manuscripts without author identification to the judges.

The judges will by majority decision select the prize paper and so notify the secretary by March 1, of the respective year. The secretary will then inform the winning contestant. The paper will be read at the annual spring meeting and the prize awarded at that time.

Composition of Board of Judges

The president, with the approval of the Board of Directors, will annually appoint three judges. They will be drawn from 1) Chairman—a member of the Northeastern Society of Periodontists, 2) an outstanding Periodontist at large, 3) a dentist holding a basic degree and engaged in dental research. Members of the Board of judges shall serve for a minimum of one and a maximum of three years.

The names of the judges shall be kept confidential by the Board of Directors.

Publication

The winning paper shall be submitted to the Journal of Periodontology or other suitable journals for publication. It shall carry an annotation

"This investigation has been awarded the Bernard Gottlieb Prize for meritorious research in Periodontics Sponsored by The Northeastern Society of Periodontists and the proper date."

Irwin W. Scopp, Secretary
The Northeastern Society of Periodontists
V.A. Hospital
First Avenue at E. 24th Street
New York 10, New York

AMERICAN SOCIETY OF DENTISTRY FOR CHILDREN

Do you treat children in your practice? If you do, the American Society of Dentistry for Children can help you enjoy your young patients. Join the Society now and benefit immediately by attending the National Meeting, October 14, 15, 16, 1960, at the Ambassador Hotel, Los Angeles, California, immediately preceding the A.D.A. Meeting.

Make Application to—National Office, American Society of Dentistry for Children, c/o Dr. C. F. Tuma, 13201 Miles Avenue, Cleveland 5, Ohio, or Dr. Ovid Slavin, Secy., Lakeville Medical Center, 2035 Lakeville Road, New Hyde Park, N. Y.

NEW YORK UNIVERSITY COLLEGE OF DENTISTRY

New York University's College of Dentistry will offer a special postgraduate course in endodontia prior to the Greater New York Dental Meeting in December.

The course includes lectures and seminars on the newer developments and advanced principles in the field of endodontia. During the four, three-hour sessions, Dr. Morris B. Auerbach, professor and chairman of the department of endodontia, and other members of the faculty will present clinical cases.

The sessions will take place from 9 a.m. to 12 noon and from 2 to 5 p.m. on Thursday and Friday, December 1 and 2.

Further information can be obtained by writing to: Director, Postgraduate Division, New York University College of Dentistry, 421 First Avenue, New York 10, N. Y.